

MAY 1955

AMERICAN ARTISAN

WARM AIR HEATING
RESIDENTIAL AIR CONDITIONING
SHEET METAL CONTRACTING

THE FINE CREAM LIBRARY
MAY 10 1955



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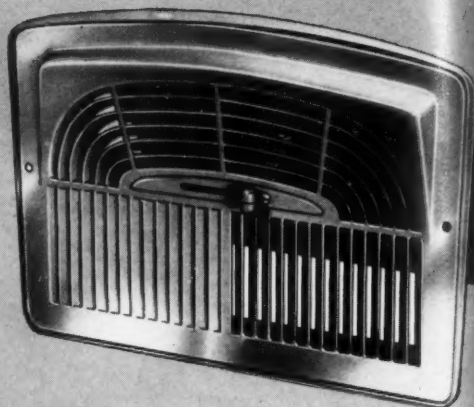
PACKS THE PROFIT PUNCH

AIR CONTROL No. 15 SIDE WALL DIFFUSER

Blanketing a cold wall from a side wall location is no problem at all when you install this diffuser. It delivers a narrow blanket of air over the wall—covers up to 21½ ft.—without drafts or scrubbing. Handsomely styled, low-cost, easily installed.

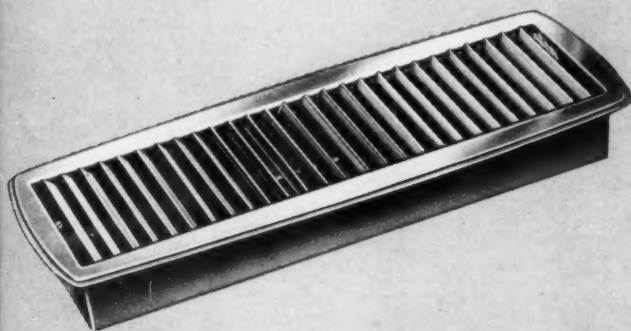
LOOK AT THESE FEATURES!

Unique fin design for rapid air diffusion. • Curved damper and center turning vane lower air resistance. • Rattle-proof spring holds valve in any position. • Adjusto-Stop for balancing system at face of diffuser. • Adapters available for baseboard installation.



KEEP YOUR BUSINESS GROWING WITH AIR CONTROL

... get the benefit of Air Control's superior design and trouble-free operation, which mean fewer call backs—more profit for you. You can handle every heating and cooling requirement with Air Control's complete line. Styling is right up to the minute, pricing is down to earth, performance is 'way out in front. Standardize with Air Control for dependable, economical, profitable installations. Prompt service for your jobber.



NEW EXTRA WIDE MARGIN
ASSURES COMPLETE COVERAGE

THE BEAUTIFUL NO. 42 FLOOR DIFFUSER

Now With Extra Margin Width. The new wide margin provides a generous floor coverage and assures a trim, tidy installation even with unusually rough openings. Four popular sizes in Metalescent or Oak finish.

- Smartly-styled one-piece seamless face.
- Curved adjustable vanes reduce resistance.
- Streamlined valve distributes air evenly over face.
- Adjusto-Stop for balancing system at face of diffuser.

New

BULLETIN 139-AC—Air Control's helpful new folder. Features entire line of ceiling diffusers; gives information on the complete Perimeter Diffuser line. Photos, price lists, engineering data. Write for your free copy.

Air Control
PRODUCTS INC.
DEPT. A COOPERSVILLE, MICHIGAN

Luxaire

Dealers Have the

PLUS

Features

In Heating . . .
Year 'Round
Air Conditioning
. . . Summer Cooling

the
PLUS

Of More Sizes, More
Types . . . More Versatility

the
PLUS

Of Ability to
Burn Gas or Oil
with Equal Efficiency

the
PLUS

Of a Choice of Either
Air or Water-
Condensing Cooling

the
PLUS

Of Low Prices to Meet
ANY Competition



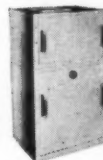
Year 'Round
Air
Conditioner
equipped
for Gas



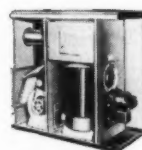
Year 'Round
Air Conditioner
with burner and
Control cover
Same Unit
equipped with
Oil Burner



Summer Air
Conditioner
installed with
a Forced Air
Furnace.



Cooling Unit
with integral
Blower



Basement A. C. Unit
Burns either
Gas or Oil



Counterflow
Unit
Gas or Oil



Utility Unit
Gas or Oil



Gravity
Furnace



Incinerator
with or without
Gas Burner



Horizontal
Furnace
Gas or Oil



Gas
Unit
Heaters

You sell more, stock less — with Luxaire!

The biggest "Plus" of the Luxaire line is its adaptability to all kinds of installations. Consider, for instance, new Luxaire Year 'Round Air Conditioners.

They are available in either Basement-Utility or Counterflow models. They utilize either gas or oil as a fuel. They adapt readily to either water-condensing or air-condensing cooling. They typify Luxaire design with installation in mind.

Regardless of the requirement, there is an adaptable Luxaire unit to meet it — at a price that will provide you with distinct competitive advantage!

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Get your supply of colorful, sales-building Luxaire catalogs. Beautiful, compelling new envelope enclosures are also your's free, for the asking.

You can build your business — with Luxaire!

**Luxaire Dealers Can Furnish Any Type
of Unit for Any Typical Installation**

THE C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO

Luxaire

HEATING & AIR CONDITIONING UNITS

AMERICAN ARTISAN

MAY 1955

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Founded 1864

Volume 92 No. 5

WARM AIR HEATING

RESIDENTIAL AIR CONDITIONING

SHEET METAL CONTRACTING

Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals"

EDITOR

CLYDE M. BARNES

ASSOCIATE EDITOR

PHILIP D. WARD

ASSISTANT EDITOR

M. C. WRIGHT

EDITORIAL ASSISTANT

H. C. LENNARTSON

ADVERTISING STAFF

WALLACE J. OSBORN

ROBERT J. OSBORN

New York City

Murray Hill 9-8233

ROBERT A. JACK

DAVID V. MAHAN

Cleveland

Superior 1-1291

GEORGE C. CUTLER

THOMAS V. JOHNSON

JAMES E. SACRA

Chicago

State 2-6916

JAMES D. THOMAS

Tucson

6-3698

R. PAYNE WEITSTEIN

Los Angeles—Dunkirk 8-2286

San Francisco—YUkon 6-2522

Portland—ATwater 4107

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Chairman of the Board and Publisher—
FRANK P. KEENEY

President and General Manager—
CHARLES E. PRICE

Editorial Director—C. M. BURNAM JR.

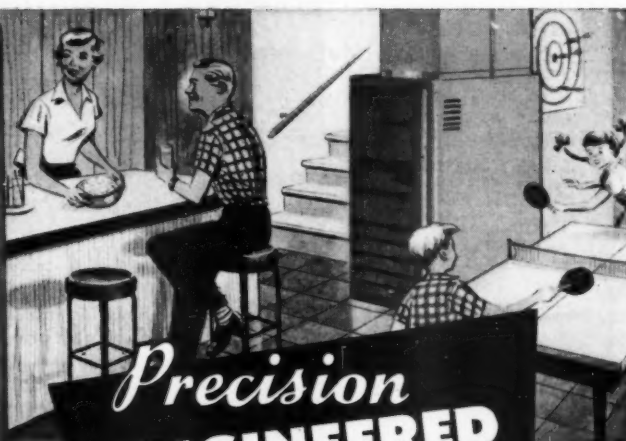
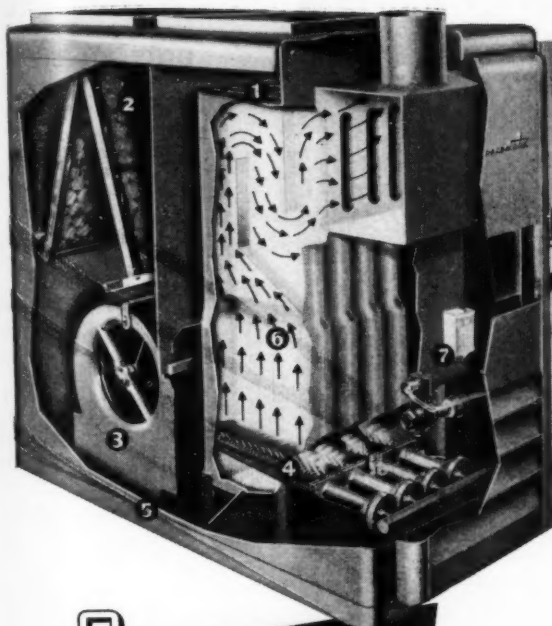
Production Manager—L. A. DOYLE

Circulation Director—FRANK S. EASTER



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8 REASONS WHY...

1 Heavy 12-gauge superbly designed gas tight heat exchanger is the vital heart of your furnace unit. Carefully designed and tested, the internal flow of gases distributes temperatures evenly over all the surface and in combination with the heavy gauge metal insures efficient long lived operation and complete safety.

2 Large area replaceable spun glass filters treated to remove dust and dirt and provide clean healthful air.

3 Large size dynamically balanced blower set in rubber assures gentle circulation of dust free warm air through your home. Blower is assembled, installed, tested and adjusted at the factory.

4 Silent Runner Flame Burner is the result of years of research by Syncromatic Engineers. Built to obtain full combustion of the gas and the greatest amount of heat possible from the fuel consumed.

FOR ENDURING DEPENDABILITY

Syncromatic
GF and GFU SERIES

WINTER AIR CONDITIONING GAS-FIRED FURNACES

Scientifically designed for quiet operation, smooth lighting and extinction with all gases.

5 Attractive Syncromatic green baked enamel jacket completely seals the furnace unit and controls. The solid base section is raised off the floor on heavy steel rails insuring the casing against rusting from floor damp.

6 The accurate and positive locking alignment of the Silent Runner Flame Burner under its own individual tube or heat exchanger insures you of the highest results in efficient heat transfer.

7 All controls concealed under jacket.

8 Motor is continuous duty resilient mounted with overload protection. It is mounted on an adjustable base and cushioned in rubber to minimize sound. It is equipped with variable speed pulley for easy adjustment (not shown in illustration).

SYNCROMATIC IS THE DEALER'S CHOICE

Quality control in production means that every GF and GFU Series furnace is Line-Tested. Every unit is factory assembled and wired, closely inspected, and operated before shipping. This assures fast, trouble-free installations. Syncromatic's amazingly quiet operation and ignition characteristics with all

gases, make it a real favorite with installers in all parts of the country.

SEND COUPON NOW FOR COMPLETE STORY

SYNCROMATIC CORPORATION, Watertown, Wis.

TELL ME MORE —
about the Syncromatic GF and GFU Series

Name

Address

City Zone State

Syncromatic Corporation

GENERAL OFFICES: WATERTOWN, WISCONSIN

the editor's notebook

Thumbing Through This Month's Artisan

... we get some pointers in year 'round promotion of perimeter heating systems and air conditioners from the D. J. Potter Co. in *Planned Promotion Program — Dealer's Key to Heating, Cooling Sales*. The aggressive promotion schedule is supplemented by an intelligent training program for salesmen and by the company's record for versatility in answering complicated demands. From there on, satisfied customers do a selling job.

Stainless . . .

AND WE are shown some techniques for eliminating expensive waste in stainless steel work in E. M. Rains' picture story, *Successful Stainless Steel Work — Product of Proper Handling*. The article suggests some precautions in storage, moving, fabrication and erection which will minimize the time and expense involved in re-finishing.

Zoning . . .

AND WE inspect a successful application of zone heating where *Sixteen Furnaces in School Meet Variable Weather Demands*, by Glenn A. Barnes who outlines results of heating a pair of classrooms with each of the furnaces which step-fire into eight common supply ducts. We see how the system produces immediate response to temperature changes and permits individual classroom control of heat and ventilation at low installation and operating cost — another successful

INCREASE EQUIPMENT SALES ...cut down delivery costs

Sentry ODF® Tank Gauge tells drivers what they want to know
at point of delivery!

"THAT LITTLE SENTRY GAUGE SURE SAVES US BOTH A LOT OF TROUBLE!"

TELLS WHEN OIL IS NEEDED

*Oil Dealer's Friend

... HOW MUCH IS NEEDED

... WHEN TO STOP FILLING

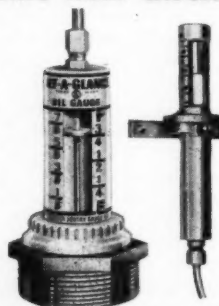
STOP FILLING →

Sentry "ODF" remote reading gauge

ONLY *Sentry* OFFERS SUCH A COMPLETE LINE OF DIRECT AND REMOTE READING TANK GAUGES

Above is SENTRY'S newest — The ODF At-A-Glance tank gauge that's setting new records in building sales and customer goodwill. Located outside of building at fill pipe, this easy-to-read weather-proof gauge shows the exact oil level in the indoor tank. Saves costly time consuming trips to basement, unnecessary hose unreeling and eliminates over-flow. Permits delivery without disturbing customer.

Other constant-register SENTRY gauges include combination tank and remote reading, barrel gauges, direct reading, and gauges for stove and space heater tank. Write today for full information about these fast moving business getters. Advertising aids available.



Combination At-A-Glance tank and remote reading gauges



KRUEGER *Sentry* GAUGES
GREEN BAY • WISCONSIN

the editor's notebook

(continued)

application of zone heating in larger buildings.

Cooling . . .

AND WE visit Research Residence 3 at the University of Illinois where C. F. Chen reports on *Cooling With a Perimeter Loop System* in a frame house with a slab floor and uninsulated sidewalls. The tests shed light on the effects on room air temperature conditions of various types of diffusers and registers and of thermostat location, in addition to answering some questions about the relationship of condensation on floor surfaces to the use of floor coverings in the residence.

Sheet Metal Firms Receive Awards

LAST MONTH, when visiting the Pittsburgh area, I was pleased to learn about a civic affair sponsored by the Pittsburgh Chamber of Commerce as it entered its 80th year. The officers of the as-



ADMIRING the plaque awarded the Scarborough Roofing Co. is John Henke (right), Erie, Pa. sheet metal contractor. The recipient is Elmer W. Scarborough

sociation felt that the occasion warranted a birthday party with the guests of honor coming from those companies that had been in business in

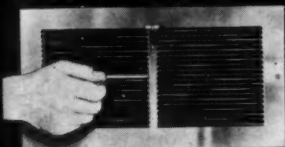


The ALL★STAR Line

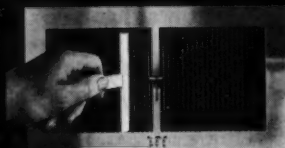
YOUR BEST BET FOR EACH AND EVERY INSTALLATION

CONVENTIONAL A.C. SYSTEMS

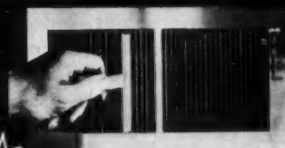
SIDEWALL AND BASEBOARD



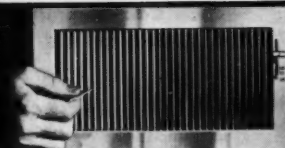
★ No. 74 DESIGN
Low-Cost QUALITY registers.



★ No. 75 DESIGN
The only registers with the TURNING BLADE VALVE.



★ No. 76 DESIGN
Fin type face with multi-shutter valve. Very popular.



★ No. 88 DESIGN
Adjustable Bar Type. Multi-shutter valve. Sizes up to 20" x 30".

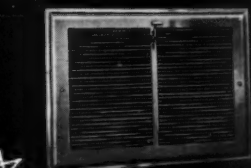


★ CEILING DIFFUSER
Sizes 6, 8, 10, 12, 14. No. 12 Dual Control Damper available.

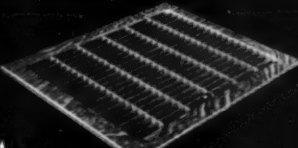
GRAVITY SYSTEMS



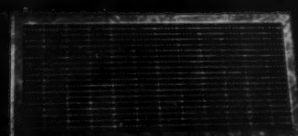
★ No. 130 SERIES
Baseboard Register, adjustable fin type.



★ No. 330 SERIES
Sidewall Register, companion to No. 130.



★ No. 210 NO-FLEX
Floor Register. Sturdy and rigid.



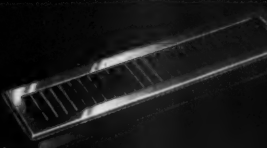
★ No. 265 NO-FLEX
RETURN AIR FACE. Large free area.



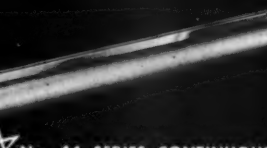
PERIMETER SYSTEMS



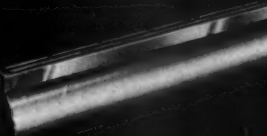
★ No. 401 SIDEWALL DIFFUSER
With Volume Control Valve. Blankets wall of average room.



★ No. 411 FLOOR DIFFUSER
With opposed louvers for perfect air pattern.



★ No. 44 SERIES CONTINUOUS
BASEBOARD — Requires no tools to assemble or disassemble. For installation in multiples of 2' and 4'.



★ No. 452 HIGH CAPACITY
BASEBOARD UNIT (2 ft.)



★ No. 405 BASEBOARD DIFFUSER
No stackhead required. Projection 2 1/8"

HART & COOLEY MANUFACTURING CO.

200 EAST EIGHTH ST.
HOLLAND, MICHIGAN

PRODUCT OF THE WORLD'S LARGEST and MOST PROGRESSIVE PRODUCERS OF REGISTERS and GRILLES

the editor's notebook

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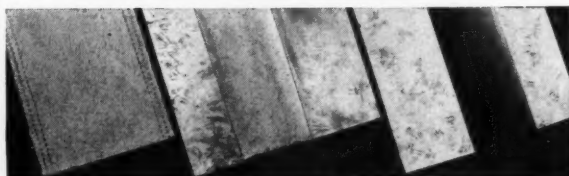
the city for 80 years or more. Among the honored guests were several members of the sheet metal industry, including Elmer W. Scarborough and Louis Demmler, both of whom received commemorative tablets. The plaque awarded to Mr. Scarborough had the inscription: *To Scarborough Roofing Co., a pioneer leader and dynamic force in the growth of a greater Pittsburgh since 1873. Presented by the Chamber of Commerce on its 80th anniversary, December 6, 1954.* Mr. Demmler's plaque carried a similar inscription.

I was certainly glad to hear about this well-earned recognition, and I'd like to congratulate both of these fine firms on the work they have done over the years in raising the standards of the sheet metal industry in the Pittsburgh area.

Unions Join Bosses In Common Aims

IT'S A COMMON belief that labor and management too often fight each other. But every once in a while (and this probably happens more often than we realize) they forget their differences to fight together for their common welfare. For example, the Otis Elevator Co. recently considered closing down its Yonkers, N. Y. plant because of high operating costs, whereupon the International Union of Electrical Workers agreed to a plan calling for labor-management cooperation in cutting costs by conserving tools, supplies and equipment and cutting down "nonproductive practices." Another union — the United Hatters, Cap and Millinery Workers International — has dropped its de-

Which TYPE* Do YOU Prefer?



FLEXI-DUCT VIBRA-STOP

***Grant Wilson**
FLEXIBLE DUCT CONNECTIONS

Stop system noise on Heating, Ventilating and Air Conditioning installations. Isolate mechanical rattles, starting vibrations, "on and off" cycle sounds, shaft whine, fan hum, etc. at their source. Apply either of the Grant Wilson Flexible Duct Connections between blower or plenum and furnace casing, between take-offs and main or branches . . . the resultant quietness of system operation satisfies customers, leads to more jobs, without call-backs.

FLEXI-DUCT . . .

Grant Wilson's Woven Asbestos Flexible Tape. The choice of those who want rock-bottom economy combined with top efficiency. Handy 50 foot rolls, 6 inches wide, with selvaged edges. Can be taped or bolted to equipment or duct work.

VIBRA-STOP . . .

Asbestos or Canvas, 4" wide, factory sealed to 4" galvanized metal on one side, 3" on the other. Preferred by those who want the quickest, easiest installation. 100 foot roll pulls out as needed from special carton.

Asbestos used is Underwriters' grade and meets Federal specs. MIL-C-4177. Canvas, also Underwriters' grade, meets Federal specs. MIL-D-10860.

Write today for full information, FREE samples and prices.



FLEXI-DUCT comes in convenient hand-size carton.



VIBRA-STOP is packed in 20" x 20" carton with core for free unrolling and handy carrying.

Grant Wilson inc.

ASBESTOS and INSULATING MATERIALS

141 WEST JACKSON BLVD. • CHICAGO 4, ILLINOIS

the editor's notebook

(continued)

mand for higher pensions, and the savings involved will go into a promotion campaign to make American women more "hat conscious." Along these lines, the National Association of Home Builders of the United States recently informed us that 13 of the key AFL building trades unions in the Chicago area have agreed this year to hold the line on wages. They reached an understanding not to demand a pay raise this year, according to the association, because of their feeling that even with construction at a high volume there are still some "uncertainties" and it is sometimes a good idea not to force the issue and thereby kill off current prosperity.

Apparently, cooperation is fast becoming recognized as a strong force in promoting conditions beneficial not only to management and labor, but to the general public as well.

'You Can't Dismiss The Guaranteed Wage'

LAST MONTH while having lunch with a Michigan warm air heating dealer, the subject of an annual wage for employees came up. The dealer was anxious to learn more about this subject. Upon returning to the office I came across the following item published by the Chamber of Commerce of the United States. Here is one side of the controversial question of guaranteed annual wages for employees.

"You can't dismiss the guaranteed wage by saying it won't work," the chamber says. "In a free economy it won't work, of course, because you can't guarantee

Two good reasons for NOT owning a Lockformer...



1

You're already so rich you don't want any more money . . . or



2

You're not in the sheet metal business and you don't intend to get in it! (In which case, what are you doing reading this magazine?)



No other type, kind or amount of sheet metal shop equipment saves so much time and so much money as do the Lockformers, the Lockformer Power Flangers, Power Slitters, Cleatformers, Standing S Cleat Machines—and, that newest member of the family, the low-priced Lockformer Snap Lock Machine.

This we can prove: the way to make the most money in your shop, is the Lockformer Way! Just to be sure you're not missing any bets, check the complete Lockformer line. Send for your free copy of the new Lockformer Catalog, today!



ONE MAN WITH A LOCKFORMER MAKES MORE THAN FIFTY FIVE LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES

THE LOCKFORMER CO.

1815 WEST ROOSEVELT ROAD CHICAGO 25, ILLINOIS

the editor's notebook

(continued)

markets. But you might make it work by these steps: . . .

1. Permitting companies to form monopolies under government regulation.

2. Dividing a sure market among the monopolies.

3. Establishing output quotas and product standardization.

4. Eliminating risk, enterprise and expansion.

5. Establishing an allotment system for distribution, policed by an army of bureaucrats.

6. Passing on the increased costs to consumers. Such increases would be inevitable. The jobs of the efficient and the inefficient alike would be protected. Competition among both employers and employees would be eliminated.

If we followed this formula, the chamber concedes, the guaranteed wage might work, but such changes would necessarily result in a controlled economy — a prospect that apparently hasn't daunted the leaders in the drive for the guaranteed wage.

"Doing-it-Yourself" Sometimes Costly

SEVERAL dealers we've talked to lately have mentioned their experiences in redoing work originally installed by over-ambitious "handymen." The consensus seems to be that if homeowners would call in qualified heating men in the first place, they'd save themselves both time and money.

One dealer said he'd read an article in a recent issue of a consumer magazine pointing out that inexperienced persons may find it actually dangerous as well as expensive to tackle certain kinds of jobs. An example cited concerned a homeowner who, in the process of installing an attic fan, touched a live wire

the editor's notebook

(continued)

and was electrocuted. Another case involved a handyman who installed an oil burner in his garage; he was later obliged to call in a licensed heating man to correct faulty wiring and to move the burner to the basement.

Report Fewer, Shorter Strikes in '54

DON MALLERY, publicity director of the National Association of Manufacturers, writes that in 1954 the total number of man days lost through strikes reached its lowest point since World War II. "During the entire year 1954 a total of 22 million man days of idleness resulted directly from labor-management disputes," he states. "Although this may seem a substantial loss, it is actually only two-tenths of one percent of the total working time of all employees of American business." He goes on to say that this figure does not take into account cessations of production which occur as a secondary result of strikes — for example, shutdowns in the plants of suppliers or customers of the striking plant.

Let's hope the incidence of strikes continues to decrease. This is, after all, an extremely costly method of settling disputes, involving a loss to the worker, the employer and the economy as a whole.

Builders Honor Sheet Metal Firm

FEATURED on the cover of a recent issue of *Building Digest*, a 24-page monthly published for general contractors operating in eastern Michigan, is a picture of the plant of McConnell Sheet

FOR HEATING

STANDARD FURNACE SUPPLY CO., LTD.
714 S. 72nd St. Phone REgent 1744 Omaha, Nebraska

AND COOLING

Dealers —

Contractors —

Architects —

HERE'S SOMETHING YOU SHOULD KNOW . . .

STANDARD Standardized Pipe & Fittings are precision built. They carry the top rating in design — construction — adaptability — uniformity.

Interchangeable
Full Air Capacity
Contact your nearest
STANDARD Jobber

STANDARD
FURNACE SUPPLY CO., LTD.

714 South 72nd St. P. O. Box 1312 Phone REgent 1744
OMAHA, NEBRASKA

Also Authorized Distributors of
HART & COOLEY REGISTERS
AMERICAN AIR FILTERS METALBESTOS
L-O-F SUPER-FINE FIBER GLASS

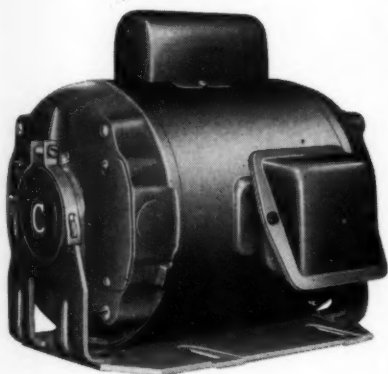
Of course — it's the completely cartoned line!

Avoid struggling starts and overloaded circuits...

SPECIFY THE



**SINGLE-PHASE
MOTOR Performance-Rated
FOR YOUR JOB**



Capacitor Motors... $\frac{1}{8}$ to 20 H.P. provide high starting torque, very high pull-up torque and require normal starting current. They are available in drip proof, splash proof, dust proof and explosion proof enclosures.

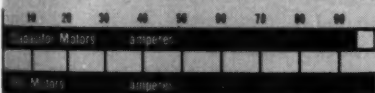
Even if you have severe starting current limitations, you can select the torque you need for sure starts and smooth pull-up to speed from the Century Performance-Rated Single-phase line. In addition, Performance-Rating also allows you to select the size, speed, mounting and enclosure to fit your application.

Whatever Your Motor Job... there's a Century Motor Performance-Rated to handle it with top effectiveness. Contact your nearby Century branch office or Authorized Distributor.

TYPICAL OPERATING CHARACTERISTICS

STARTING CURRENT

(High current may cause circuit overloading)



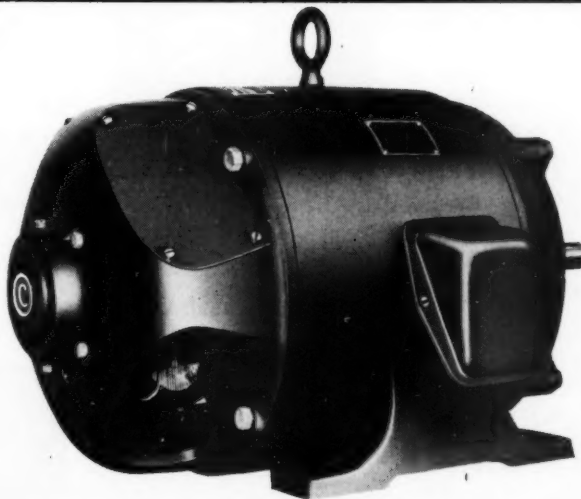
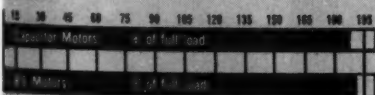
STARTING TORQUE

(available to start the load)



PULL-UP TORQUE

(available to bring the load up to speed)



Repulsion Start, Induction Motors (type RS)... from $\frac{1}{2}$ to $7\frac{1}{2}$ H.P. provide very high starting and pull-up torque, yet require unusually low starting current. They are available in drip proof and splash proof enclosures.

**Performance-Rated[®]
Motors
 $\frac{1}{8}$ to 400 H. P.**



CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri • Offices and Stock Points in Principal Cities

**the editor's
notebook**

(continued)

Metal, Inc. We were proud to learn about this recognition of the important services provided by our industry for general contractors. The information presented in the related article was obtained from the January 1954 American Artisan, in which was published a detailed account of the operations of the Mc-Connell company.

**Says Existing Homes
Fast Growing AC Market**

CLOUD WAMPLER, president of Carrier Corp., points out that "the existing home, rather than the new one, is fast becoming the major part of the residential air conditioning market." There is an \$8 billion market, he estimates, in existing homes with forced warm air systems including those which can be converted and those which will need replacement. Another \$6 billion potential, he says, is in homes now heated with gravity systems which sooner or later will need to be replaced by a new system.

**John Hertzler Named
To State Commerce Post**

WE WERE pleased to learn that John R. Hertzler, co author (with V. T. Kartorie) of the prize winning Artisan article *Where Wil. Residential Air Conditioning Be Sold?*, has been appointed to the post of deputy secretary of commerce of the state of Pennsylvania.

We extend our best wishes to Mr. Hertzler for every success in his new endeavor, and believe that his background, both in industry and civic activities, makes him exceptionally well qualified to

- for Greater Strength
- for Longer Wear
- for Lower Cost



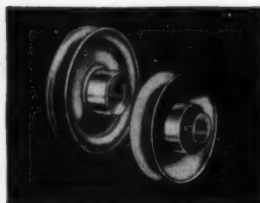
Zatko
**One Piece
Stamped Steel
V-BELT
PULLEY**
**for
Heating and
Air Conditioning
Equipment**

Standard Fractional Horse Power V-Belt Pulleys. All sizes in stock. Variable Pitch. Allows Speed Variation up to 30%. OD's from 3¼" to 3½".

**ALL PULLEYS BROACHED
AND 100% INSPECTED**

Used by a majority of the largest Automobile and Heating-Air Conditioning Manufacturers.

Write for literature
and prices



Zatko
Metal Products Co.
20850 St. Clair Ave., Cleveland 17, Ohio

**the editor's
notebook**

(continued)

meet the requirements of his new office.

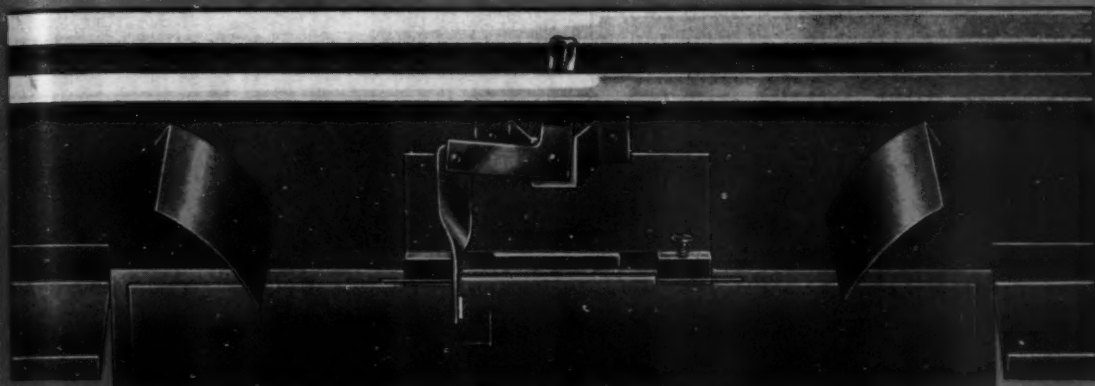
**Steel Production
Continues High**

WE'RE GLAD to note that steel production continues to rise. Estimates for the week beginning April 4 place production at 2,276,000 net tons, 94.3 percent of capacity. During the previous week, 2,278,000 tons, or 94.4 percent of capacity, were produced. These figures are based on reports from companies having 96.1 percent of the industry's annual capacity as of January 1, 1955. The percent of capacity in 1955 is based on annual capacity of 125,828,310 net tons as of January 1, 1955.

**Reports on Rural
Heating Market**

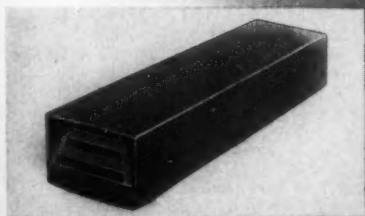
I WAS interested in the results of a recent survey conducted among 1,300,000 residents of rural areas. The findings indicate that in the 12-month period covered by the study, some 68,900 residents insulated their homes, about 20,800 installed warm air furnaces, and approximately 1,300 purchased floor furnaces. The popularity of automatic heat with residents of such areas is indicated by the fact that in the 12-month period some 36,400 purchased thermostats for their heating systems. About 1300 purchased stokers for coal fired furnaces. The survey was a joint operation conducted by the United States Bureau of the Census in cooperation with Capper Publications, Inc. of Topeka, Kans.

Clyde M. Barnes
EDITOR



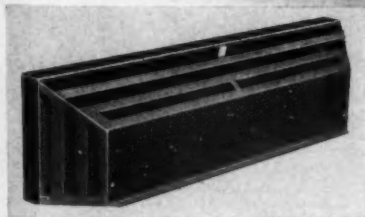
from **TITUS** Inc.

A NEW **BUILT-IN DAMPER** ON EVERY PERIMETER DIFFUSER



• NEW INDIVIDUAL PACKAGING AT NO EXTRA COST

Each Titus perimeter diffuser is individually packaged to assure perfect condition and perfect protection of finish in traveling from factory to installation.



• NEW COLOR STYLING AT NO EXTRA COST

New hammertone finish brings an impact of distinctive modern design to any room. Creates new character for the whole structure of a room. Is the most beautiful finish ever created for perimeter diffusers.

...AT NO INCREASE IN PRICE

There is no extra cost for (1) NEW BUILT-IN DAMPER, (2) SPARKLING NEW BEIGE METALLIC HAMMERTONE FINISH, (3) NEW DAMAGE-PROOF SAFETY PACKAGING ... with each diffuser individually packed.

Here is the most advanced new perimeter diffuser model. Built to such precision standards, it is years ahead in design, appearance, performance. It is truly the most efficient diffuser ever built ... handling cool or warm air with equal efficiency ... keeping uniform temperatures throughout the room ... directing the air where it is most needed ... eliminating low level stratification.

SEND FOR FREE CATALOG TODAY!

TITUS, Inc., WATERLOO, IOWA

Gentlemen: Please send me free brochure on new TITUS PERIMETER DIFFUSER ... that is creating a new trend in air diffusion.



Name _____

Address _____

Company _____

City _____

State _____

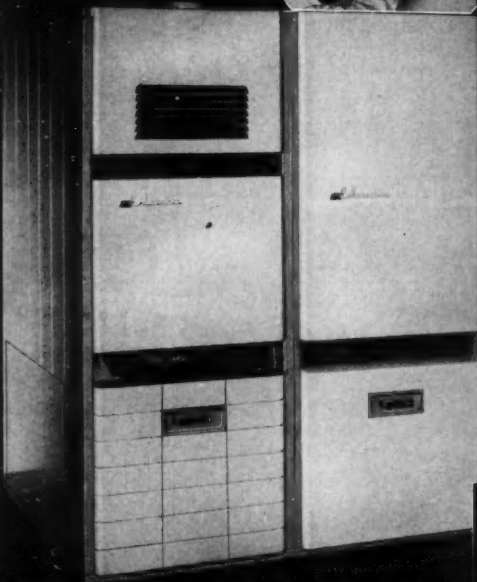
Exclusive \$1,000 Comfort B

Only **Coleman** Blend-Air®

Here's Why Blend-Air SELLS FASTER...

3½-Inch Round Ducts

Easily installed anywhere, the Blend-Air ducts and flexible fittings can be installed between studs without costly cutting and alteration. Faster installation in new homes—a real sales clincher for remodeling, especially for replacing hot water or steam radiators.



Blend-Air Furnaces

Install separately or with Blend-Air systems. Complete range of sizes—fit in basement, utility room, closet, alcove, attic or under-floor crawl-space. Blend-Air furnaces may be used with existing systems in older homes, or with conventional systems in new homes.

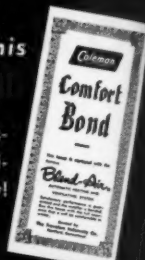
Blend-Air Cooling

Doubles your sales prospects! Every time you sell Blend-Air heating, you have a ready-made customer for Blend-Air cooling. Uses same 3½-inch ducts as heating or may be used with present forced-air system! Saves up to 97% on water cost—25% on electricity bills.

In new home or old, sell the system that puts the MOST comfort into your customer's home and lets you guarantee it. Blend-Air gives the EVEN-EST heating ever developed, thanks to Coleman's exclusive "blenders." The entire system is pre-engineered from furnace to blenders, with 3½-inch round ducts that fit between studs. Makes installation faster in new homes, saves costly cutting in old homes! And only Blend-Air lets you guarantee heating comfort, backed by \$1,000 bond! Nothing else like it in the industry.

Show your prospects this

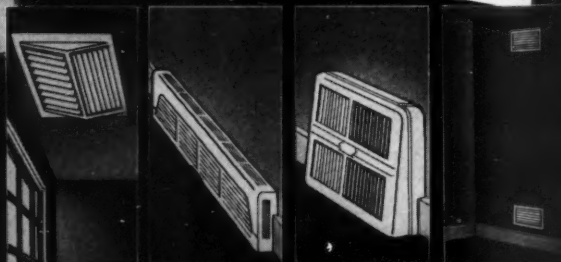
it's proof they'll get the most comfort from Blend-Air. Builds confidence in you and your company!



HERE'S PROOF Blend-Air can make YOU extra sales and profits

"Blend-Air sales have increased so much I have given up all other lines of heating equipment," says H. L. Pike, Loyd Heating & Air Conditioning Co., Greensboro, N.C. "I feel my customers are selling Blend-Air for me!"

"Coleman has something far advanced in warm air heating," says Ray Tretheway, Port Huron Coleman Co., Port Huron, Mich. "We organized 4 years ago and today have 450 satisfied customers. Blend-Air definitely sells itself!"



EXCLUSIVE Blenders! Never before—a way to keep room air so uniform, floor-to-ceiling and wall-to-wall! Gives individual room-temperature control! For true perimeter heating and cooling—stops heat or cold at its source. Here's the difference in the exclusive blender system:

Instead of releasing air directly into room, creating objectionable drafts, Blend-Air system forces hot or cool air into the blender at velocity of 1,200 feet per minute. This creates a vacuum drawing room air into blending chamber, mixing it with hot or cool air—then releasing it at a comfortable room temperature. Result: Constant and even floor-to-ceiling circulation, NO drafts, supreme comfort!

Since 1900—makers of the famous Coleman lamps, lanterns, camp stoves!

rt Bond Helps You SELL!

How COLEMAN Advertising

Helps You SELL

With Big FULL PAGE Advertisements

1 To Home Owners and Future Buyers
Month after month, prospects will read about Blend-Air's exclusive features—how easy it is to install in new home or old, and how easy to own on easy FHA or "open end" mortgage financing! Be ready to close these sales!

To Builders—Builders will read how they can guarantee comfort to their prospects when you install Blend-Air heating for them. Recommend Blend-Air on your bids and get extra sales! Ask about "Portfolio of Home Merchandising Ideas for 1955."

2 COLEMAN Helps you "close" these sales with the biggest, hardest-hitting promotion program in its 55-year history! Broadsides, product films, signs, displays, demonstrators, ad mats—so many it takes a whole book to list them all!



\$1000.00 Comfort Bond
guarantees this won't happen
to you again!

Pressing one minute—too warm the next? Are you putting up with a balky, inefficient, obsolete heating system? Then right now is the time to install Coleman Blend-Air—the only central heating system that guarantees your home comfort with a \$1000 Bond!

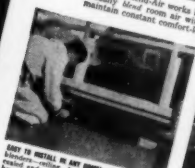
Only the exclusive Coleman Blend-Air Heating System makes it possible!

Blend-Air is completely pre-engineered from furnace to last outlets. Coleman's exclusive Blend-Air "blenders" take the place of ordinary registers and control the heating of your home to give you and your family beautiful comfort in every room.

Coleman Blend-Air works like magic—the Blend-Air actually blend room air with freshly heated air to maintain constant comfort-level temperatures. And

you individually regulate the heat in bedrooms, kitchen, bath or living room by adjusting the finger-tip control knob on the blender.

It's the most comfortable home heating you've ever enjoyed because Blend-Air heats evenly from floor to ceiling—from wall to wall. And that's why only Coleman guarantees your home lasting comfort with exclusive \$1000 Comfort Bond!



EASY TO INSTALL IN ANY HOME! Four types of Blend-Air—wall, ceiling, basement and floor—blend heat and warm air as desired. They're easy to install in any home. Blend-Air's remote control valve is located between the ceiling and the wall. Let your Coleman dealer show you how easily your home can have Blend-Air.



SAVES SPACE—SAVES FUEL DOLLARS! New and improved Blend-Air furnace units are in utility rooms, basements, small closets. They're compact, efficient, and save space. They're also easy to install. They're also easy to install. They're also easy to install.



COOLER AIR CONTROLS! Blend-Air's exclusive "blenders" take the place of ordinary registers and control the heating of your home to give you and your family beautiful comfort in every room.



COLEMAN Since 1900—Makers of Lamps, Radiators, Camp Stoves, Home Heating and Air Conditioning

Coleman

THE COLEMAN COMPANY, Dept. WH-101, Wichita 1, Kansas
Without obligation to me, please send information on:
☐ Blend-Air Heating and Air Conditioning
☐ Vit-Rock Water Heaters

another FAST SELLER!
COLEMAN Vit-Rock Gas Water Heater

with "JET RECOVERY" action

Easy to sell because only Coleman puts a solid, patented rock wall between water and metal. Can't rust! And "jet recovery" gives over 200 gal. hot water daily from smallest models!



Backed by
10-Year Warranty
and EXCLUSIVE
\$500 Bond!

put **Coleman** to work for you, too!

MAIL COUPON TODAY!

The Coleman Company, Inc.

WICHITA, KANSAS

home heating and air conditioning.

GAS • OIL • LP-GAS

**The Coleman Company, Inc., Dept. AA-151
Wichita 1, Kansas**

I want to know more about how the Blend-Air System, Blend-Air Furnaces and Air Conditioners can increase my sales. Have your distributor's representative call on me.

Name _____

Firm Name _____

Address _____

Town _____ Zone _____ State _____





Shown here are air ducts, 58" x 66" and 38" x 38", of the Atlantic City Convention Hall, which are insulated with aluminum-foil-faced Super-Fine. This job was handled by the Triangle Insulation Company, Inc., of Philadelphia, Pa.

L·O·F Glass Fibers Super-Fine can reduce installation costs 30%

When you're after an air-conditioning contract, a big saving in insulation cost can be mighty important.

Provided, of course, your insulation material is as good or better than that offered by competition.

Here's a case in point: The Triangle Insulation Co., Inc., installed the insulation on the new air-conditioning system at the Atlantic City Convention Hall. The job involved approximately 16,000 square feet of duct insulation.

The specifying engineer realized that L·O·F foil-faced Super-Fine offered high efficiency in in-

sulation material together with a vapor barrier. *Most important, ¾-pound density Super-Fine could be installed at a 30% saving compared to other methods and materials.*

Here's why installation costs less:—Super-Fine is pliable and will conform to irregular contours. Easy to handle and apply, there's no shaping or fitting with Super-Fine.

Super-Fine's fine glass fibers will not burn or absorb moisture, will not rot or mildew. It is verminproof and rodentproof.



FREE! For helpful folder giving instruction in installation, write: L·O·F Glass Fibers Company, Dept. 44-55, 1810 Madison Avenue, Toledo 1, O.



**L·O·F GLASS FIBERS
COMPANY**

Makers of glass fibers by the exclusive
"Electronic-Extrusion" process

Some guys have all the luck! While other heating dealers try to explain the advantages of home heating equipment, you can show your builder how to cut building costs and design his home for greater living comfort with the Norman Southerner.

And all because of an entirely different kind of sales demonstration being furnished to Norman heating dealers. It's called the Norman Sketchbook! Not an ordinary piece of literature, but an attractive sales presentation that shows your builder how the Norman Southerner gives him a freedom of design to plan his home with more living space. Maybe you've already tried to tell him how the Norman Southerner will do the job. Now you can show him — BEFORE he builds his next home.

Arrange a demonstration of the Norman Sketchbook. Be sure to let him see the many different home illustrations, including the most popular designs in today's building market.

He'll really go for the floor plan drawings, showing the complete Norman Southerner heating installation in EVERY HOME. What better proof of the amazing versatility of the Norman Southerner for all home heating installations?

Write for your copy of the Norman Sketchbook today!

Sitting pretty with the Norman Sketchbook!

Norman heating dealers use this exclusive, new sales presentation to sell builders on the advantages of Norman Southerner heating.

**Norman PRODUCTS COMPANY • 1150 Chesapeake Avenue
Columbus 12, Ohio**



Manufacturers of a Complete line of Gas
Heating and Air Conditioning Equipment.



The Norman Southerner
Horizontal Forced-Air Gas Furnace

New local advertising package

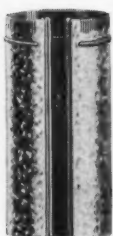
Another big promotion for Norman heating dealers. A complete package of advertising and sales promotion material... including local newspaper advertising mats. Send for your free copy today!



'We've been doing business with
MILCOR* for more than
40 years and we're
well satisfied''

— says Fred Nowak, partner

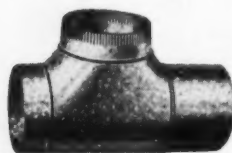
Nowak & Company
1928 W. Fullerton Ave.
Chicago, Illinois



Lock-Joint
Furnace Pipe
Available in 2 ft.
and 5 ft. lengths



90° Adjustable Elbow



Airflow Tee-Joint

"WE like Milcor Furnace Pipe and Fittings, because they make our job easier. They always *fit together well* on the job and — because they are so well packaged — they are easy to handle and keep track of in our warehouse. We don't get different products mixed together in our stock.

"Besides, the pipe and fittings are always clean and new-looking when we install them for the customer. We like the uniform Milcor quality, too."

It's the same story wherever you go — the Milcor line rates ace-high with successful sheet-metal men.

How about you — are you using Milcor Galvanized Furnace Pipe and Fittings to give your customers snug-fitting, good-looking jobs that stand up for years? Make *Milcor* standard in your shop.

Prices are available from your heating jobber, or from our nearest branch listed below.

INLAND STEEL PRODUCTS COMPANY

4023 W. BURNHAM ST. • MILWAUKEE 1, WISCONSIN

BALTIMORE 5, MD., 5300 Pulaski Highway — BUFFALO 11, N. Y., 64 Rapin Street — CHICAGO 9, ILLINOIS, 4301 South Western Blvd. — CINCINNATI 25, OHIO, 3240 Spring Grove Ave. — CLEVELAND 14, OHIO, 1541 E. 38th St. — DETROIT 2, MICH., 690 Amsterdam Ave. — KANSAS CITY 41, MO., P. O. Box 918 — LOS ANGELES 58, CALIF., 4807 E. 49th Street — NEW YORK 17, N. Y., 230 Park Avenue — ST. LOUIS 10, MO., 4215 Clayton Avenue.

*Reg. U. S. Pat. Off.

S-133

SMCNA Elects Stromberg President in San Francisco

THE SHEET METAL Contractors' National Association held its 12th annual convention April 27 to 30 in San Francisco. New officers elected were: president, Paul Stromberg, Washington, D. C.; first vice president, W. A. Kuechenberg, Chicago; second vice president, Nat N. Leas, Fresno; third vice president, Clarence J. Meyer, Buffalo; treasurer, Charles H. DeLaughter, Oklahoma City. New directors elected for three years are Andrew Stuart, Providence; Walter F. Limbach, Pittsburgh; Glen Angermann, Denver; and J. Frank Park, Los Angeles.

Other members of the board of directors are: W. K. Backman, Des Moines; Leo B. Budde, Dayton; John F. Creegan, Hawthorne, N. J.; W. Rhett Hartin, Jr., Columbia, S. C.; Robert Holming, Milwaukee; W. J. Perkinson, Chicago; Steve C. Raymond, Coral Gables, Fla.; Francis A. Staten, Portland, Ore.

The four day convention was attended by 218 men and 156 ladies.

George Hochstein Heads OHI

GEORGE E. HOCHSTEIN, sales manager of the heating division of The Heil Co., has been elected president of the Oil-Heat Institute of America. He succeeds Paul K. Addams, president of the Fitzgibbons Boiler Co.

The OHI held its 33rd annual convention in Chicago last month. The program included talks and panels on heating and year 'round air conditioning, and featured Douglas McKay, Secretary of the Interior, who spoke on America's oil and other resources at the "industry-wide" luncheon. Reports of convention doings which are of particular interest to the Artisan's readers will appear in the next issue.

Many of the conventioners planned vacation trips to coincide with the convention, some going to Hawaii, others to Mexico and some to Alaska before returning. Several indicated they were extending their stay in the West to visit Yosemite National Park, Los Angeles, Palm Springs and Las Vegas, Nev.

The convention sessions included forums, conferences and panel discussions. Subjects receiving attention were warm air heating and cooling, curtain wall, cost allocation, estimating, contracts, proposals, insurance, new tax code and labor relations.

A complete report of the activities at this convention will appear in the June issue of American Artisan.

Herbert T. Gilkey Joins NWAHACA

HERBERT T. GILKEY, formerly research assistant at the University of Illinois and author of many of the technical articles published in American Artisan, joined the National Warm Air Heating and Air Conditioning Association on May 1 as technical secretary to coordinate the dissemination of technical information to the industry. Mr. Gilkey will be located at the Cleveland offices.

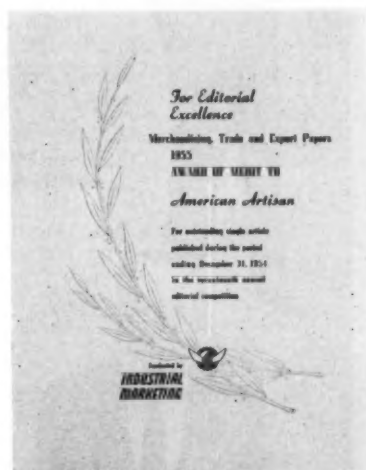
Winners of Apprentice Contest Receive Awards

FIRST PRIZE in the recent sheet metal apprenticeship contest conducted by the National Joint Sheet Metal Workers' Apprenticeship committee went to Paul O. Johnson of Albuquerque, N. M. C. E. Lancaster, Port Wentworth, Ga. won second honors and William Hertel, Evansville, Ind. placed third. Honorable mention went

Artisan Gets Award for Editorial Excellence

AMERICAN ARTISAN has been awarded a certificate "for editorial excellence" in the 17th annual editorial competition for business publications conducted by the magazine *Industrial Marketing*.

The award winning article was *Where Will Residential Air Conditioning Be Sold?* published in the



AWARD OF MERIT presented to American Artisan for editorial excellence for the article *Where Will Residential Air Conditioning Be Sold?*

December 1954 American Artisan. It dealt with the air conditioning potential throughout the United States using a climatic factor to evaluate the market potential by states and areas.

The certificate was for the best single article in the merchandising and trade paper classification and was presented at a luncheon meeting held during the conference of the National Industrial Advertisers' Association at Washington, D. C.

to Gerald Hekhuis of Grand Rapids, Mich.

Interest in this year's contest ran unusually high, according to secretary Joseph J. Kaberlein, as was evidenced by the large number of

(Continued on page 22)

Your Westinghouse Distributor In



◀ Service Manager,
DEE DEITRICK



Quality Control
Supervisor,
JOHN COONEY ▶



◀ Advertising Manager,
PETE SEAY



◀ Division Manager,
JOHN GILBREATH



HENRY KLEINKAUF, president of Natkin & Company, with offices in Arkansas, Colorado, Missouri, Nebraska and Texas, says: "Westinghouse Factory Sales Training—by top company executives—provides the kind of help our dealers need to profitably sell, install, and service air conditioning."



Sales Manager, ▶
BILL COTT

Increases Your Profit with . . .

Engineering Supervisor
JERRY BEHNE



Market Analyst,
JEFF WILLIAMS



Product Manager
Heat Pump,
MILT ANGER



Packaged Units
Product Manager,
HOWARD BLAIR



Training Supervisor,
WALTER YEARY



A Complete Factory Sales Training Program

To make your selling job more profitable . . . ease your installation problems . . . and reduce your service calls . . . Westinghouse has started a new kind of factory training program.

Your men who take this program get intensive instruction directly from top management people—the men you see here backing up Westinghouse Distributor Henry Kleinkauf.

Here is aggregate experience in air conditioning that totals more than 157 years—planning, designing, producing, marketing, advertising and selling air conditioning. These men *know* manufacturing, *know* dealers, *know* customers. They know how to turn problems into orders. They will pin-point the methods for your men to take back home and use every day.

Get in touch with your Westinghouse Distributor today, and arrange to send your men to Staunton.

In addition to Sales Training, Westinghouse backs you with one of the most COMPLETE LINES in the industry . . . to give you an "edge" over competition: packaged residential and commercial air conditioners, combination year-round heating and cooling units, plus all-electric Heat Pump and the exclusive Precipitron®—an electronic air cleaner that removes over 90% of all airborne dust, dirt, pollen and mold.

COMPLETE SALES PROMOTION PACKAGE . . . to locate prospects, close sales, and build profits through newspaper ads and direct mail. You also get radio and TV scripts, window and store displays, identification signs, banners . . . everything you need.

See your Westinghouse Distributor for the most COMPLETE PROFIT-BUILDING PLAN ever offered!

YOU CAN BE SURE...IF IT'S

Westinghouse

J-80468

MAIL THIS COUPON TODAY

Westinghouse Air Conditioning, Dept. A-4
Box 510, Staunton, Va.

I want the *complete* story on the 1955 Westinghouse Air Conditioning line . . . and Sales Promotion Package—"Invitation to Leadership".

- ☐ I am not yet in the air conditioning business
- ☐ I am now an air conditioning dealer
- ☐ I now handle the following lines

NAME (please print)

ADDRESS

CITY ZONE STATE

WHAT'S HAPPENING

(Continued from page 19)

Winning Apprentices Receive Awards

(Continued from page 19)

sets of problems — 1100 — distributed to local joint apprenticeship committees and apprentice schools in all parts of the United States and Canada.

The Stanislaus County Joint Apprenticeship committee, Modesto, Calif. was named winner of the "plaque award" for the best sheet metal apprentice training program conducted during the year 1954, and was presented with the plaque at the recent convention of the Sheet Metal Contractors' National Association. The Detroit Area Sheet Metal Workers' Joint Apprenticeship committee received honorable mention for its outstanding achievements in the field of apprentice training.

Issue More FHA, VA Housing Loans

MORE THAN half of the houses built in recent months have been financed with government insured or guaranteed mortgages, according to the United States Savings and Loan League. The percentage of new housing starts financed with FHA or VA loans reached an all time high of 61 percent this past winter the league states in its *Quarterly Letter*. This compares with only 39 percent in 1953 and 42 percent for the first six months of 1954.

Reduces Selling Prices For Titanium Products

REM-CRU TITANIUM, Inc., jointly owned by Crucible Steel Co. of America and Remington Arms Co., reduced its selling prices for titanium mill products in 1954, according to the Crucible company's annual report to stockholders. The reduction was in keeping with reduced raw materials costs and further advances in melting and rolling techniques.

AGA Adopts New Standards

REVISIONS and additions to a number of current American standards for gas equipment were adopted by the American Gas Association's approval requirements committee at its 65th meeting. They become effective January 1, 1956, and apply to domestic gas incinerators, water heaters, furnaces, floor furnaces, vented recessed heaters, unit heaters, duct furnaces, gas conversion burners, pressure regulators and metal connectors. The new requirements were developed, according to AGA, to keep the industry's national equipment standards in line with latest technical advancements, construction trends and installation practices. Copies of the standards may be obtained

from the AGA Laboratories, 1032 E. 62nd St., Cleveland 3. All of the above types of products received by the AGA laboratories following the effective date will have the new standards applied during approval tests. Manufacturers desiring to have units tested under the standards prior to the effective date may have such tests performed upon request.

NHWA Proposes Change in Name

THE NATIONAL Heating Wholesalers Association, Inc. has proposed a change in its incorporated name to the National Heating & Air Conditioning Wholesalers Association, Inc. The proposed name, it is believed, will better express the scope of the association's activities.

Steady Gains in National Economy Indicate Excellent Business Year

THE OUTLOOK for continued prosperity remains excellent, according to the Chamber of Commerce of the United States. "There is nothing in the economy to foreshadow a collapse of the stock market," the chamber stated. "On the contrary, the recovery from the 1953-1954 dip in the economy actually has gained momentum in the first three months of 1955." The chamber's regular quarterly report on the economic outlook cited the following additional factors as supporting business confidence in the remainder of the year:

- Steel production now is over 90 percent of capacity as against 70 percent a year ago.
- Spendable income (income after taxes) has risen quarter by quarter and now is \$256 billion, an all time high, and \$6 billion above the 1953 level.
- Electric power output is running about 10 billion kwhr per week as against 8.5 in March of last year.

• The index of industrial production has reached the highest point since October, 1953.

• Exports and imports are up about \$100 million per month over a year ago.

In addition, manufacturing and trade inventories are expected to increase with the pickup of business in early 1955, thereby expanding employment and incomes. Also, the construction industry seems likely to continue a major element of economic strength, with the Federal Reserve System reporting that more people expect to buy homes this year than in any year since 1948. This demand is supported by the steady rise in incomes, new interest in modern homes, and liberal credit. Expenditures for new plant and equipment indicate another upward trend.

The chamber reports that actual shortages are occurring in the supply of certain types of steel, aluminum and various other metals.

THERE'S

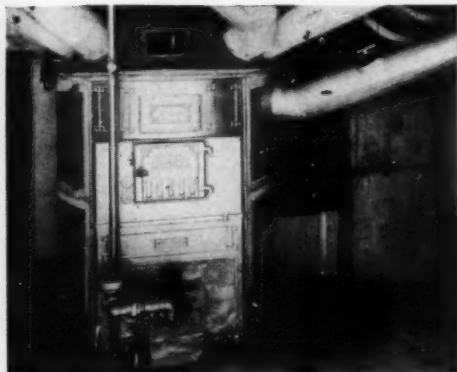
DOUBLE PROFIT

in

Janitrol

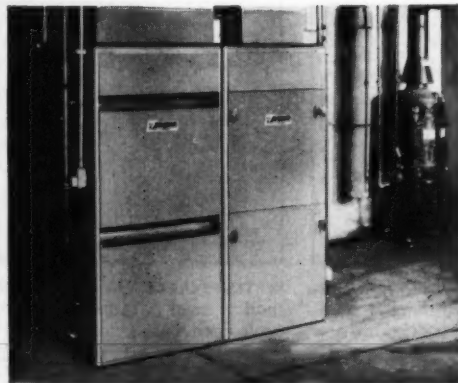
for

**MODERNIZING
OLDER HOMES**



BEFORE . . . Here's the old furnace, which had efficiently operated with a Janitrol gas burner for over 27 years! Every conversion burner owner is a ready prospect for year 'round conditioning.

AFTER . . . Janitrol Win-Sum Twins make an attractive, compact installation. The heating units in popular sizes are factory-assembled and tested . . . permit you to make fast, reliable installations.



SALES HELPS FOR YOU

Make modernization selling easier with the ad mats and direct mail available from Janitrol at little or no cost.

This Janitrol Dealer sold a 365-day comfort "package" instead of merely replacing a 27 year old gas-converted gravity furnace with a new heating unit. With these Janitrol Win-Sum Twins, he secured a satisfied home owner as a booster for additional sales . . . he more than doubled his profit!

Every city has a district of older, higher quality homes where the alert dealer will find a rich and profitable market for year 'round comfort.

Janitrol provides you with a complete line of modernization sales helps. And with Janitrol, you sell proved heating and cooling engineering that goes far beyond mere price to overpower your competition.

WHOLESALESAERS AND CONTRACTORS

Write today for complete information on the Janitrol line and profit possibilities in your area.

Janitrol
HEATING AND AIR-CONDITIONING
DIVISION

Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Alvar Simpson Ltd., Toronto 13

NEW HOME? OLD HOME? BIG HOME? SMALL HOME? Worthington air conditioning fits them all!



System for every need

NEW HOME, NEW AIR CONDITIONER. That makes good sense for you *and* your customer — when the air conditioner is a Worthington *year-round* residential unit. This good-looking package sends cool, dry, filter-clean air to every room in summer . . . healthfully-humidified, *balanced* heat in winter. And it takes up less than 8½ square feet.

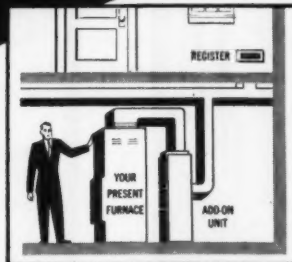
Sure Worthington can handle any air conditioning job — residential *or* industrial. There's more to a Worthington franchise than that, however. Worthington's big-money national ad campaign, heavy promotional back-up, and in-the-field sales promotion specialists spell success for every Worthington dealer. For the full story, write today to Worthington Corporation, Air Conditioning and Refrigeration Division, Section A.5.48-A, Harrison, New Jersey.

A.5.48

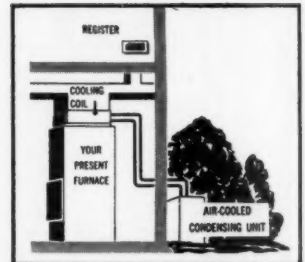
WORTHINGTON



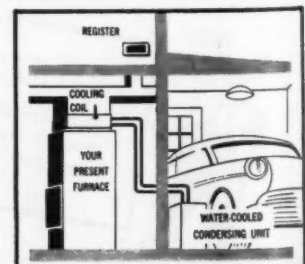
The Best Franchise . . . The Most Complete Line



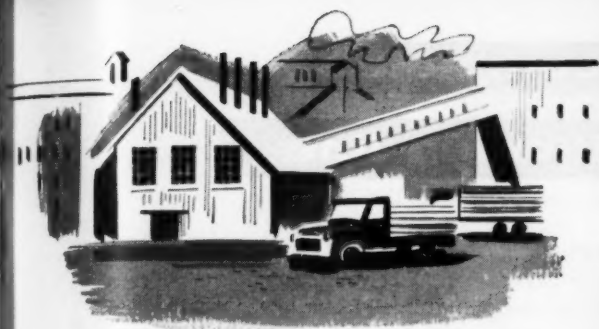
FOR HOME WITH WARM-AIR FURNACE, install a Worthington Add-On Unit for filtered, comfort-conditioned air all year 'round. Installation is easy. For extra air delivery, mount a Worthington fan section on top of add-on unit.



WATER SCARCE? Don't let that spoil a sale! Worthington's air-cooled condensing unit is all electric — *needs no water at all!* Hooks into warm-air furnace, goes outdoors, in garage or breezeway. 2, 3, or 5 hp sizes.



SHORT ON SPACE? Here's the answer to that problem — Worthington's new Packaged Water-Cooled Condensing Unit. This compact, adaptable unit goes anywhere — closet, basement, attic, even the garage. Use it with Worthington's Remote Duct Cooling Coil for existing homes or new construction.



WEIRTON

GALVANIZED SHEETS

*for long-lived
roofing and siding*

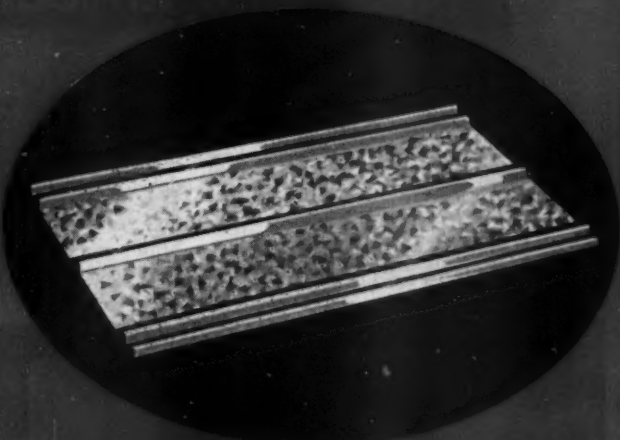
There's an easy way to solve roofing and siding problems quickly, dependably, economically. That's the Weirton way—with Weirton galvanized steel sheets. Their tight zinc coating resists cracking, peeling and flaking. The strength of steel plus the corrosion resistance of zinc gives added years of life. And long experience shows that galvanized sheets give more protection, with less maintenance and at lower cost.

Weirton's modern production processes, plus close quality control all along the line, make Weirton galvanized sheets a best buy for your roofing and siding needs.

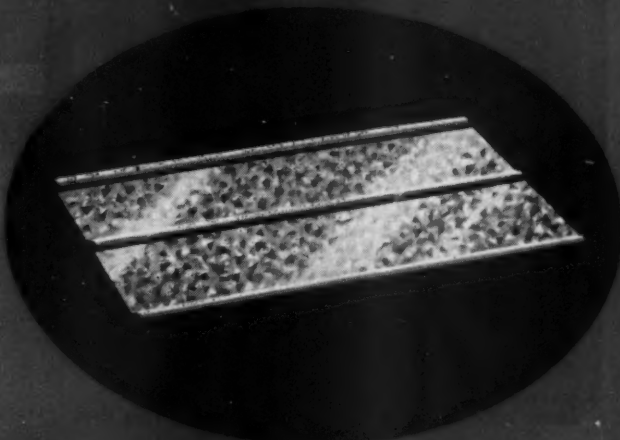


WEIRTON STEEL COMPANY
Weirton, West Virginia

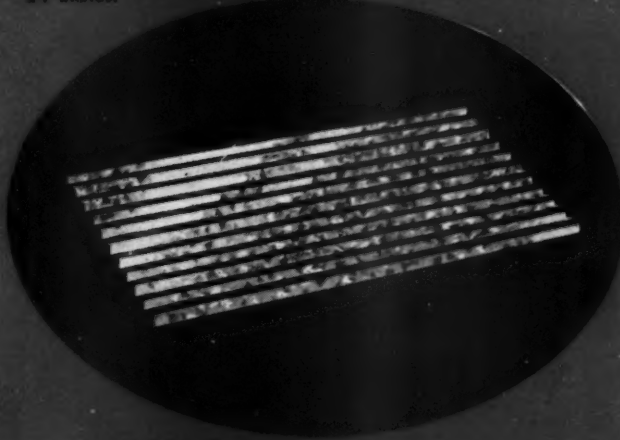
NATIONAL STEEL CORPORATION



Famous Weirton "Safety Drain" galvanized steel sheets combine maximum protection with outstanding good looks.



Weirton galvanized V-Crimp sheets are made in 2V-, 3V-, and 5V-crimped, and in gauges 26, 28 and 29; covering width, 24 inches.

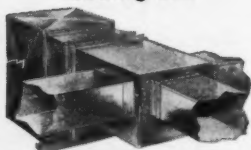


Weirton galvanized corrugated steel sheets are most economical in first cost, and are the strongest form of steel roofing because the corrugations strengthen the entire sheet.

...the industry's most complete

yearound air conditioning line

Duct Type
Cooling Unit

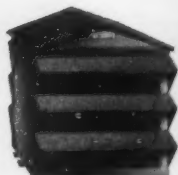


Assure yourself profits 365 days a year. Offer your customers a choice of more than 140 heating and cooling units . . . all featuring the most modern developments and design . . . to fit any type or size house.

Get your furnaces, fittings and cooling units *all from one source* under one brand name . . . WILLIAMSON. Let us show you in detail how comparison proves WILLIAMSON selling superiority all year 'round.

WILLIAMSON

HEATING & COOLING



Compressor
Unit



Counter-Flow
Heating and
Cooling Unit



Space
Cooling Unit

COMPLETE HEATING LINE . . .

- GASAVER and OILSAVER Deluxe Furnaces . . . 1st really new feature in warm air heating in last quarter century. Lo-Boy, Hi-Boy, Gravity
- FLO-WARM Gas, Oil and Coal Furnaces . . . highest quality at price unmatched for value per dollar. Lo-Boy, Hi-Boy, Counter-Flow, Horizontal
- ASSEMBLED Gas and Oil Furnaces . . . WILLIAMSON quality at competitive prices—factory assembled, wired and tested. Lo-Boy, Hi-Boy, Counter-Flow, Horizontal.

COMPLETE COOLING LINE . . .

- . . . WATERLESS AIREfrigeration with unsurpassed efficiency—featuring exclusive Counter-Flow or Duct Evaporator cooling that requires no additional floor space in a slab perimeter or basement house.
- . . . WATER-COOLED Units that need only 2.7 sq. ft. of floor space.
- DUCT, PIPE AND FITTINGS for any Heating or Cooling System . . . die-cut, pre-fabricated.

act for profits everyday!

THE WILLIAMSON HEATER CO.
3181 MADISON ROAD, CINCINNATI 9, OHIO

Gentlemen: Rush me details on WILLIAMSON
year 'round profits.

Name.....Title.....

Firm.....

Address.....

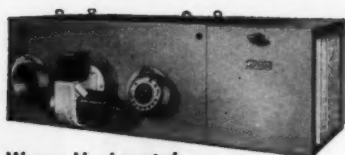
City.....Zone.....State.....

Nationally Advertised in . . .





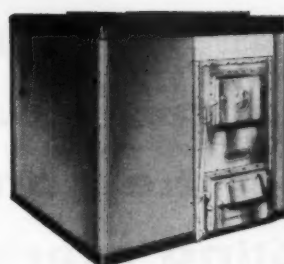
Gasaver Lo-Boy



Oil Flo-Warm Horizontal



Assembled
Gas Horizontal



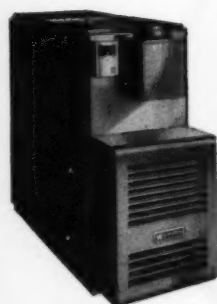
Coal Flo-Warm



Oilsaver Lo-Boy



Gasaver Gravity



Assembled
Gas Lo-Boy



Assembled
Oil Lo-Boy



Assembled
Oil Hi-Boy



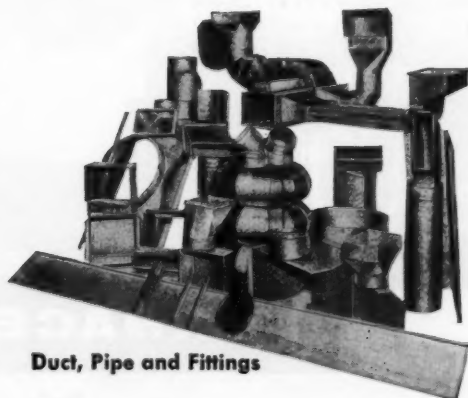
Assembled Oil
Counter-Flow



Assembled
Gas Hi-Boy



Gas Flo-Warm Lo-Boy



Duct, Pipe and Fittings



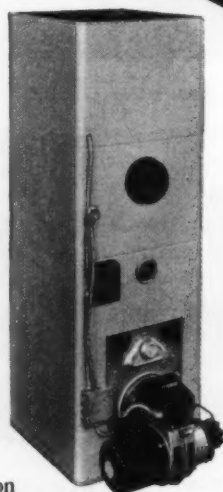
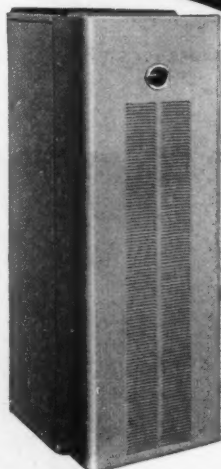
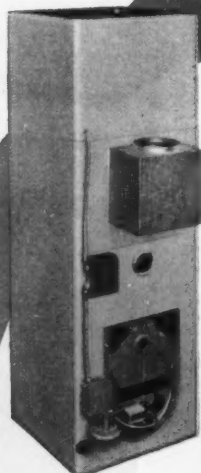
Oil Flo-Warm
Hi-Boy

**For the
profitable part
of the home
heating market**



NEW UTILITY SERIES

— gas and oil Highboys for utility room, closet or basement — wherever quality and price are important and space is at a premium. 4 models — from 75,000 to 125,000 BTUH input for gas and from 72,800 to 112,000 BTUH output for oil.



NEW COUNTERFLOW SERIES

— gas and oil, for perimeter heating, slab and crawl space homes. For installations where the furnace may be in or near the regular living area — where quiet operation and modern appearance are especially important
4 models — from 75,000 to 125,000 BTUH input for gas and from 72,800 to 112,000 BTUH output for oil

NEW

MOR-SUN

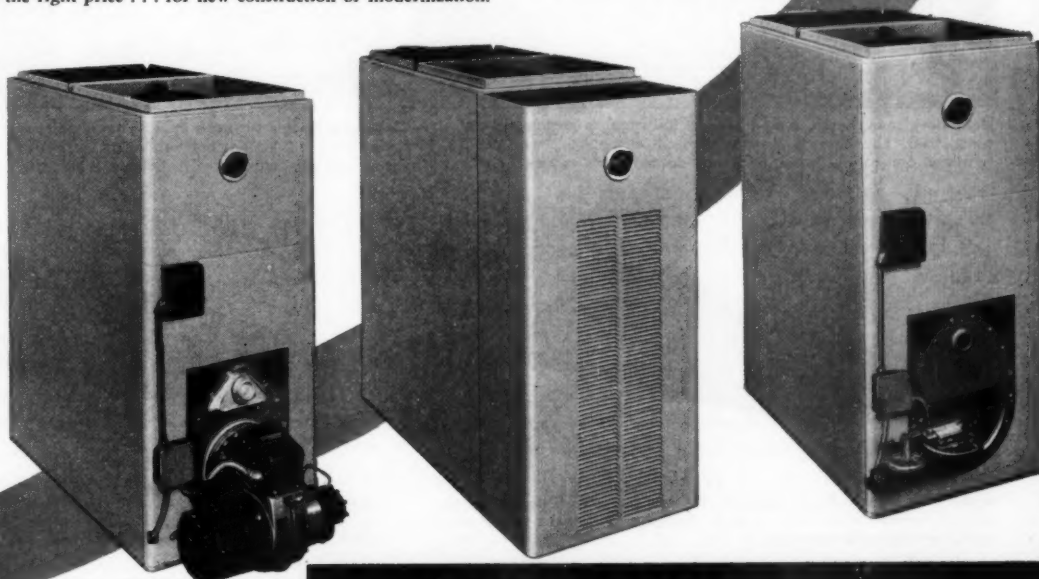
AUTOMATIC FORCED WARM AIR

FURNACES

You get so much more with MOR-SUN

Exclusive MOR-SUN Features that SPELL MORE PROFIT for any heating dealer

- M** Mor-Sun's all-new, engineered Heat Exchanger—fully guaranteed for 10 years. Its 50% prime heating surface and unique design are the reason for Mor-Sun's amazingly efficient, economical operation.
- O** Outer casings of all models are painted the new Autumn Haze Green—a builder-approved color with high customer appeal.
- R** Rounded edges, no sharp corners or projections complete the clean, modern appearance of Mor-Sun Furnaces.
- E** Every Mor-Sun Furnace is competitively priced to give you the maximum opportunity to close every sale—at a profit.
- P** Pre-wired, completely assembled, factory tested Mor-Sun Furnaces are easy to install—easy to service.
- R** Rugged, all-steel, welded construction, by the latest precision manufacturing methods is the basis for Mor-Sun quality.
- O** Oil-fired models feature a revolutionary new combustion chamber that combines the quick-heat properties of stainless steel with the durability of ceramics.
- F** Factory sponsored sales promotion—national advertising to builders and consumers—sales, engineering and service assistance—and a good co-op advertising plan—are all "plus" advantages when you're a Mor-Sun Dealer.
- I** If you're looking for a *complete* line—a *quality* line—to help you make more money...
- T** There's a Mor-Sun Automatic Warm Air Furnace for every home heating requirement... the right size... the right price... for new construction or modernization.



NEW CHALLENGER SERIES

—gas and oil Lowboys for homes with basements. The most compact, automatic forced warm air furnaces available in their range of capacities. 3 models—from 95,000 to 125,000 BTUH input for gas and from 84,000 to 112,000 BTUH output for oil.



FOR ALL THE FACTS...

fill in this coupon and mail today

Mor-Sun Furnace Division, MORRISON STEEL PRODUCTS, Inc.
609 Amherst Street, Buffalo 7, New York

Send us all the facts about Mor-Sun Warm Air Furnaces and Air Conditioners.

Name..... Title.....

Firm.....

Street.....

City..... Zone..... State.....

Mor-Sun Warm Air Furnaces and Air Conditioners are distributed nationally and sold through leading heating equipment dealers everywhere.

Also manufacturers of ROLY-DOOR STEEL GARAGE DOORS and MORRISON SERVICE BODIES.

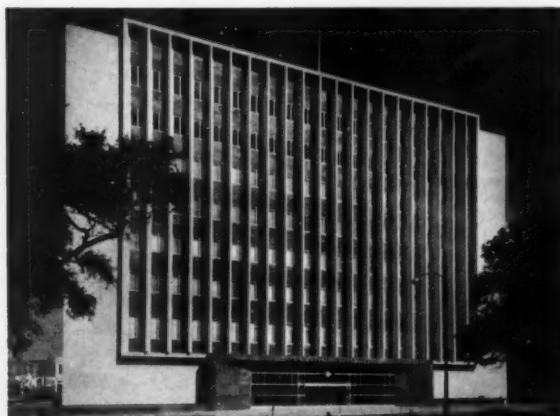


**LINE-O-FLO
ENGINEERED**

Air Distribution

**... accents architectural
design of court house!**

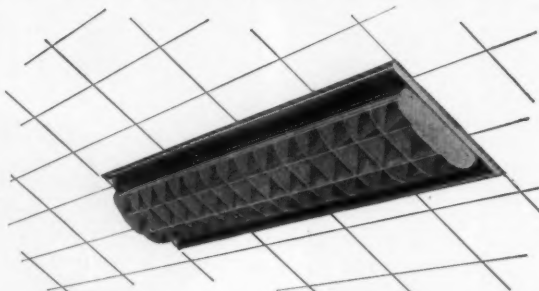
*Architects: FINGER & RUSTAY. Mechanical Engineer: I. A. NAMAN. General Contractor: MANHATTAN CONSTRUCTION CO.
Mechanical Contractor: CHARLES G. HEYNE AND COMPANY.*



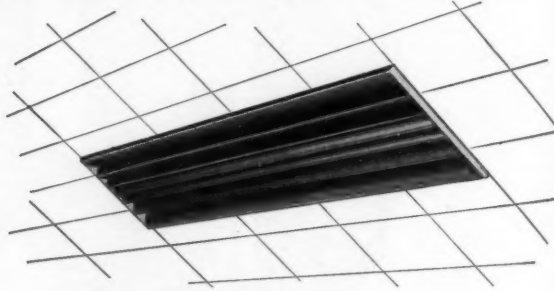
Eight-story court house, except for the jail area, is completely air conditioned. Four primary systems, located on the roof, heat, cool, ventilate, and control humidity as outside conditions require.



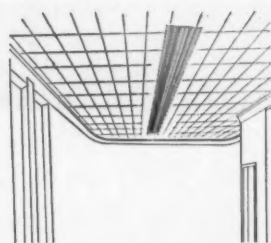
Line-O-Flo Ceiling Diffusers in lobby and court room areas quickly equalize temperature differential between supply and room air, preventing stratification and eliminating drafts. Combine readily with light fixtures.



Model LL Line-O-Flo is designed to receive a Day-Brite light unit, which is isolated from the air stream. Flange arrangements permit individual or continuous mounting.



Model LS Line-O-Flo, as used in Harris County Court House, provides positive control of air volume, plus uniform distribution over entire length. Individual or continuous mounting.



BLAZING THE TRAIL TO BETTER AIR DISTRIBUTION

First with widely accepted line-type air distribution

Desire of architects and engineers for continuity of design in modern architecture led Barber-Colman Company into development of Line-O-Flo air distribution equipment. These

were the first successful line-type outlets on the market. Scientifically designed, rolled steel members provide rigidity. Two models are available with flange arrangements for individual, or continuous strip installation. One Line-O-Flo model is designed to receive a fluorescent light unit. Both

models are dimensionally co-ordinated for use with acoustical ceilings and other building products. Either may be used for supply (with balancing dampers) or return units. Reliable performance data is available on Line-O-Flo and all other Uni-Flo products. For literature, prices, and expert engineering help, phone our nearby Field Office, or write us.

Barber-Colman Company

Dept. Q, 1106 Rock Street, ROCKFORD, ILLINOIS, U. S. A.
Field Offices in Principal Cities

Air Distribution Products • Automatic Controls • Industrial Instruments
Aircraft Controls • Small Motors • Overdoors and Operators • Molded
Products • Metal Cutting Tools • Machine Tools • Textile Machinery



Washington Letter

War preparedness program assigns

Battle Stations for Industry

By Arnold Kruckman

An effort to avoid the characteristic scramble for war-time mobilization in industry takes shape in the Production Allocation Plan which assigns defense production to various industries in advance of a crisis

MANY RESPONSIBLE persons here in Washington, civilian and military, often tell you they feel the country at large is not adequately informed about the human aspect of the possibilities of war in Asia. They appear to think something is more apt to happen than we usually are able to deduce from what we are told.

This should not be understood to mean that war is imminent, or that it is a conflict which would get out of our control. The feeling seems to be that industry and the economic community of the nation should be better advised in order that it might be more readily prepared for any eventuality. The most common feeling seems to be that we should not be exposed to a scramble for preparedness such as was in some manner characteristic of World War II — and probably all wars.

Preparedness today comes under the Assistant Secretary of Defense for supply and logistics; more specifically the program is under the direction of J. Lewis Powell, Production Allocation coordinator and J. H. Evans, of the Mobilization Planning branch.

Assign Industry's Defense Role

An *Executive Briefing on Military Planning with American Industry* was recently issued, in the words of the Defense Department, "as a thumbnail outline of the Production Allocation Program." The statement continues, "The importance of industrial support in the defense of the country is shown by the Production Allocation Plan, which assigns *battle stations* to American industry.

"Just as every sailor aboard a war ship knows, in advance of battle, where he is to go and what he is to do, so every essential manufacturer and supplier of military items and equipment should know in advance of mobilization what he is to produce, for whom and how much.

"Armed service procurement planning officers (ASPPO's) representing the Army, Navy and Air Force, are continuously locating the best sources of military production, developing practical production schedules and reserving production capacity to meet these schedules in event of war.

"The Production Allocation Plan . . . is an across-the-table direct planning between military buyers and wartime makers of specific items. Here's how it works: A military agency has a mobilization requirement for an item; it then makes up a list of manufacturers believed to be best suited to produce this item in the quantities needed. This list is screened against the *Department of Defense Register of Planned Wartime Material Suppliers*. If the plants are listed, it means an ASPPO has already been assigned and planning is in progress with plant management. All further planning is referred to the ASPPO for that plant.

"On the other hand, if the military agency finds that the plant is not registered as a planned producer, the office of the Assistant Secretary of Defense (supply and logistics) is asked to register the plant and assign Armed Services Procurement Planning responsibility. This means that all requests for military planning with this plant will be funneled through one ASPPO representing all the armed forces. He is the military planning

WASHINGTON LETTER—

liaison with this plant for the Army, Navy, Air Force and Maritime Commission.

Military-Industry Team

"The ASPPO works with a designated member of plant management. Together these two form a military-industry team whose first function is to plan the best possible wartime use of the plant. They make a survey of the plant, list its facilities, determine its capabilities and wartime potential. This information is available to all the military services. The military agencies needing this production then schedule their needs for the specific items they wish the plant to produce in the event of war. The schedules are reviewed by plant management with the ASPPO and his industrial teammate and are matched against the plant's production capacity, shop loading, machine tool setup, production equipment limitations, etc. The result is practical mobilization production schedules for military items.

"These schedules are then reviewed and agreed to by the military agency and industrial management. These no. 406 schedules become the plant's *battle station*, or mobilization production schedule.

"Should 'M Day' come, this plant could shift more quickly from peacetime production to war production because leadtime has been cut by planning. The plant knows what it is to make, how much it is to make and for whom. The battle station mobilization schedules can be quickly converted to contract. Planned plants are not stalled by mobilization; their production is accelerated because they have a head start. Their planning has been completed in advance. This means more production sooner; continuity of employment for management, engineers, technicians and workers; and continuity of operation for the owners.

Planning Eliminates Waste

"Through mobilization planning, the military is able to count on realistic industrial support. In addition, it gets new weapons just off the production line rather than obsolete weapons from storage. To the taxpayer, intelligent planning means that we have not had to purchase and store war reserves of military items which might never be used, but which almost always become obsolete.

"Production Allocation planning combines industrial know-how and military logistics to maintain industrial readiness and buys more defense per dollar."

Time Becomes Defense Weapon

Other documents discuss preferential planning, departmental planning and planned suppliers:

"There has been public mention of two classified documents dealing with mobilization planning: *The Department of Defense Preferential Planning List*, and *The Alphabetical Register of Planned Wartime Material Suppliers*. In a number of instances an inference has been drawn that these documents, although classified, are available for public use. Such is not the case; they are both designed for use only within the Department of Defense due to the sensitive security nature of their contents. Under certain circumstances, outlined below, properly identified individuals may be given certain limited information from the *Alphabetical Register*.

Who's Who in Defense Production

"This register lists approximately 34,000 firms participating in the industrial mobilization planning program of the Department of Defense. This program is usually referred to as the Production Allocation Program.

A properly identified official of a firm listed in the register may be shown an entry or entries pertaining to his own organization.

"*The Department of Defense Preferential Planning List* (PPL) is a list of the most critical and important items for which mobilization planning will be conducted under the program. It is mandatory that the Army, Navy and Air Force plan in detail for any item on this list, which represents the core of hard-to-get items which the Department of Defense must control and assure priority treatment. A packaged list of critical important items requiring priority planning treatment is significant security information. Therefore, the PPL is classified and may not be made available to the public.

"It is emphasized that the PPL is a list of military end-items, and not a list of manufacturing facilities.

Second Priority Items

"In addition to the *Preferential Planning List*, each military department has developed a supplemental list which is comprised of items on which that department is conducting production allocation planning. These items might be considered second priority items.

"Although the alphabetical register is a classified document, responsible members of plant management can learn their own firm's listing by contacting the nearest Army, Navy or Air Force procurement office and properly identifying themselves as members of their firm's management.

"A firm which is not listed in the register may offer its production capacity as a planned mobilizer supplier by communicating with the military office which pur-

This advertisement, appearing now in builder magazines, gives you a headstart in selling the great new Rheem Year 'Rounder. For full details, write to: Rheem Manufacturing Co., 7600 S. Kedzie, Chicago 29, Ill.

Which house has the **RHEEM** Year 'Rounder?



Here are two houses, identical in almost every respect, including price. Yet the one on the left was sold the first day the houses were open. The one on the right has had prospective buyers tramping through it daily ever since, and is still unsold.

Why?

Because the house on the left is equipped with a Rheem Year 'Rounder—central air-conditioning and heating in one unit. The house on the right has only a conventional forced-air furnace.

It just stands to reason that most home-buyers prefer a house with air-conditioning to one without, other things being equal. That's where the Rheem Year 'Rounder comes in. It provides year-round central air-conditioning—heating in the winter and cooling in the summer—efficiently and economically. The Year 'Rounder's lower cost is achieved by combining heating and cooling equipment in one perfectly designed compact unit.

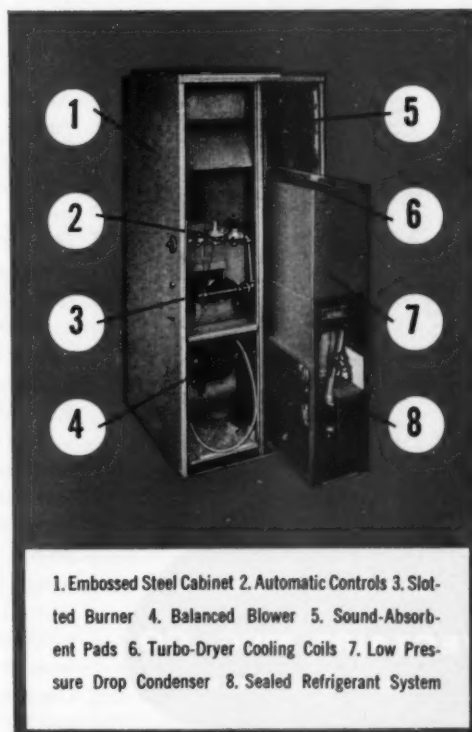
The Rheem Year 'Rounder line also provides models that adapt themselves to "zone cooling"—cooling the living quarters in the daytime, the sleeping quarters at night. This saves on operating costs as well as on original investment.

Why not find out for yourself, as so many builders have, how quickly the Rheem Year 'Rounder can change "For Sale" signs into "Sold" signs. For full information, call our nearest office. Or write to Rheem Manufacturing Co., 7600 S. Kedzie Ave., Chicago 29, Illinois.

Switch-in-Time, Switch to



RICHMOND AND SOUTHGATE,
CALIFORNIA; HOUSTON, CHICAGO, NEW YORK, NEW ORLEANS; LINDEN, N. J., AND SPARROWS POINT, MD.



1. Embossed Steel Cabinet
2. Automatic Controls
3. Slotted Burner
4. Balanced Blower
5. Sound-Absorbent Pads
6. Turbo-Dryer Cooling Coils
7. Low Pressure Drop Condenser
8. Sealed Refrigerant System

HEAT OR COOL WITH

Vectaire

PERIMETER
BASEBOARDS

World's most beautiful baseboard • The IMPERIAL
styled by VECTAIRE • priced to sell



Fits flush with wood baseboard
Available in 5' and 10' lengths
"Push button" heat control

WRITE FOR FACTS AND FIGURES

VECTAIRE MFG. CO.
Melrose, Mass.

WASHINGTON LETTER —

chases the military items it is now making or could make in wartime. The question of which military offices buy what items is answered in booklets entitled *Purchased Items* and *Purchasing Locations of the Department of Defense and How to Sell to the Department of Defense*, available from the Central Military Procurement Information Office, The Pentagon, Washington, D. C.

"The firm should then bring to the attention of the appropriate military offices evidence of its ability to produce the specific articles they buy. This is a selling job; it is up to the firm wishing to be registered to demonstrate its wartime production potential to the office involved."

Where to Get Information

As a rule the chief sources for further information within easy reach of most plants and suppliers are the Army Engineers; the Inspectors of Naval Material; Air Force Headquarters; Quartermaster Corps; Chemical Corps; Signal Corps Supply Agency; and various ordnance depots or districts. Addresses of these offices may be obtained from the local telephone book or from the Assistant Secretary of Defense for Supply and Logistics, The Pentagon, Washington, D. C.

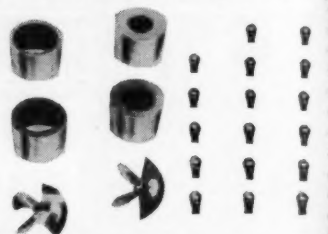
Difficulties are clarified in a book issued by the BDSA, entitled *The Defense Material System in Our American Industry*, which was recently published to make clear "why a materials production and controls system is needed and to describe the fundamental characteristics of the Defense Materials System Regulations."

This system has an important place in defense preparations by the economy, and its literature is well prepared and an intelligent essential for people in every part of the industrial setup. Cooperation in any problem is available through Tom C. Mason, program executive, Business and Defense Services Administration, U. S. Department of Commerce, Washington 25, D. C.

THIS IS A
MONEY-MAKER
FOR YOU!



SUGGESTED
RETAIL PRICE
\$109.50
(complete with 3
standard controls)



Mt. Hawley

ALL-IN-ONE Oil Burner

Here's one burner you can stock instead of three — for it quickly adjusts to any capacity from .6 to 4.5 gph! Handles any job from a small home to a six-apartment building... gph can be quickly increased if the owner adds space.

Capacity changeover requires only two parts to be replaced: the choke ring and air diffuser. You get a complete set of these, as shown above, with each burner you order. Combine the correct two with any one of 17 commercial nozzles to get the gph rating you want!

Mt. Hawley ALL-IN-ONE (F45) comes in four burner tube lengths with universal flange or pedestal mounting. No complicated firing head or "hairline" adjustments — operation is simple, quiet, efficient. Weight: 52 lbs.

Your letter or postcard brings the whole story on this revolutionary new burner — at no cost or obligation. Don't put it off — write today!

See at Booths 784-785, NAPC Show!

MT. HAWLEY MFG. CO.
Dept. A-5 Route 68 and 174 Peoria, Illinois
Rush full facts on the revolutionary Mt. Hawley ALL-IN-ONE
(Model F-45) oil burner! I do not obligate myself in any way.

Name.....
Firm.....
Address.....
City..... State.....



Mt. Hawley MFG. CO.
PEORIA, ILL.

Why is **LENNOX** No. 1 in Warm Air Heating?

It's this **DEALER POLICY**
that makes **LENNOX NO. 1**



**LENNOX BRINGS YOU YOUR
NO. 1 OPPORTUNITY IN
HOME AIR CONDITIONING**



- Largest, most complete line
- Air-cooled and water-cooled models
- Single package and remote systems

Cash in on the big "boom" in home cooling! Lennox 100% hermetic systems easy to install—give longer, care-free service. Models available for use with forced air heating systems—save your customers up to half the cost.

Lennox wants its dealers to be prosperous—locally the most prominent name in home comfort. The entire factory-dealer partnership (no middle man) is built upon this basis. Here's what being a Lennox dealer would mean to you:

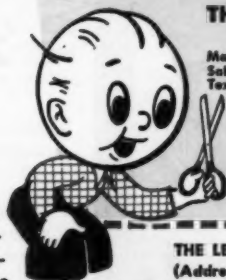
- The finest, most complete sales and service schools in the industry... designed to teach your men the latest techniques, increase your sales volume.
- A product warranty that assures customer satisfaction... far more liberal than is common in the industry.
- Most effective, "two-listed" selling tools ever offered dealers in the heating and air conditioning field.
- Proven business development ideas... door openers, methods of getting extra sales and service business. Special plan to get more builder business, too.
- Nation-wide branch office engineering service that places the finest heating and air conditioning technicians at your disposal—whenever and wherever you need them.
- Largest consistent advertising program... tells your prospects about your products... helps establish you as the leading dealer locally.
- The finest products in the industry... the most complete line to sell.

THE LENNOX FURNACE COMPANY

Leader in home comfort for 60 years

Marshalltown, Iowa • Syracuse, N. Y. • Columbus, Ohio
Salt Lake City, Utah • Los Angeles, Calif. • Fort Worth,
Texas • Decatur, Georgia

In Canada: Toronto and Calgary



Clip and Mail Today!

THE LENNOX FURNACE COMPANY

(Address your nearest branch. See locations above.)

All right! Send me more information about a Lennox dealership in my town. Show me how I can make more money with the Lennox line. No obligation on my part.

COMPANY NAME _____

ADDRESS _____

CITY _____ STATE _____

MY NAME _____

ANNOUNCING NEW HONEYWELL

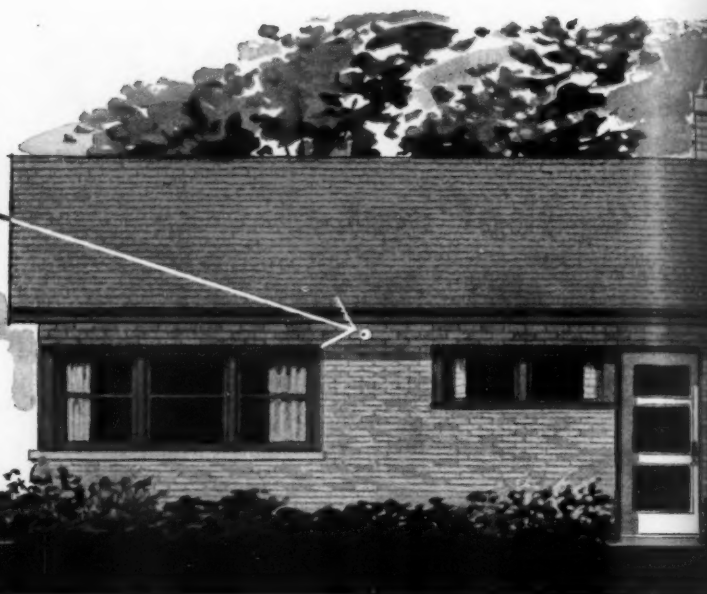
This New Electronic Thermostat outside your house tells



Actual size

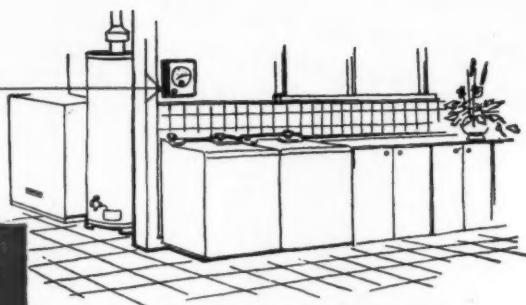
New Outside "Weathercaster" Thermostat

Designed by Henry Dreyfuss in a new all-weather material—this tiny thermostat is mounted outside your house where the weather is. Eight times more sensitive than ordinary thermostats, it contains a super-sensitive electronic element that is constantly in tune with the outside weather.



Control center

of the electronic comfort home



New Electronic Control Center

Receives signals from the inside thermostat and tells the heating or cooling plant what temperature is required for ideal comfort. And with its gleaming appliance-white finish, it makes a handsome clock that matches in beauty the refrigerator in your kitchen or the washer in your utility room. In winter, the Control Center automatically lowers the temperature at night to save fuel, and automatically picks it up again in the morning.



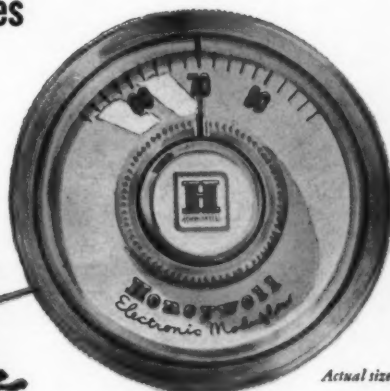
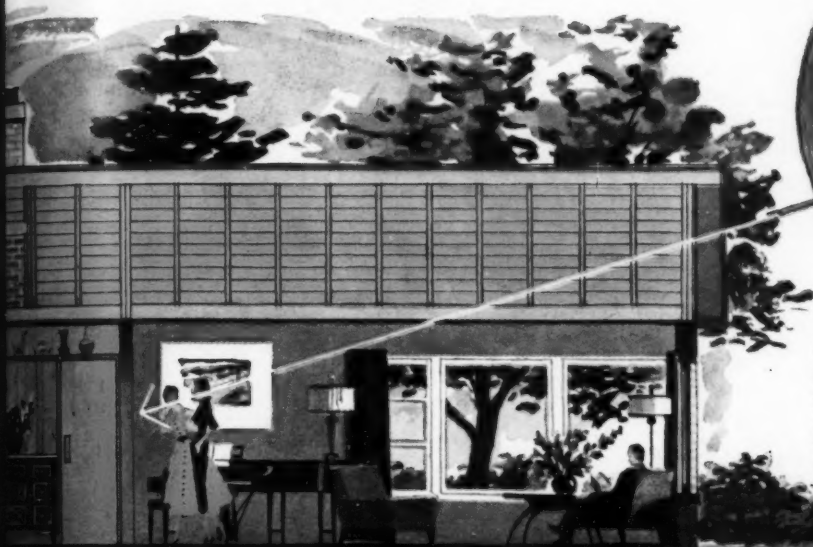
1/2 Actual size

30,000,000 LIFE Magazine readers will see this colorful advertisement announcing new Honeywell Electronic Moduflow early in September.

ELL ELECTRONIC MODUFLOW

tells

this new inside thermostat when the weather changes



Actual size

New Inside "Golden Circle" Thermostat

This beautiful electronic thermostat is scientifically designed for modern living—by noted industrial designer Henry Dreyfuss. You simply dial the daytime and nighttime temperatures you want. Just set them once. Thereafter, the outside thermostat raises or lowers settings automatically.

Why you need a thermostat outside and inside your house!

The last word in healthful home comfort can be secured only by varying the indoor temperature in relation to outside temperature.

For example, as the temperature outside goes down, the walls of your house naturally become colder. Thus, you need a rise in temperature inside your home, to offset this *cold wall chill*.

To provide this *temperature variation*, you need two thermostats, one *outside* and one *inside*. *Electronic Moduflow*, with two thermostats, gives you all-electronic, automatic, temperature control.

In *winter*—this new system, accurate to within $\frac{1}{4}$ of one degree, varies the indoor temperature as the weather changes. This keeps you bathed in con-

stant comfort. Your house is never too hot, never chilly. You say good-bye to drafty floors. And because your heating plant is neither over- nor under-heating, you get the most out of every fuel dollar.

In *summer*—if you have central air-conditioning, new *Electronic Moduflow* regulates your cooling plant—to give you *controlled cooling*.

It's easy to get *Electronic Moduflow* for your home

See your builder, heating dealer, or architect. Average price installed, \$199.40. Works with any adequate central heating or cooling. For a new home—can be included in the financing. For your present home—buy it on an improvement loan.



For heating or cooling

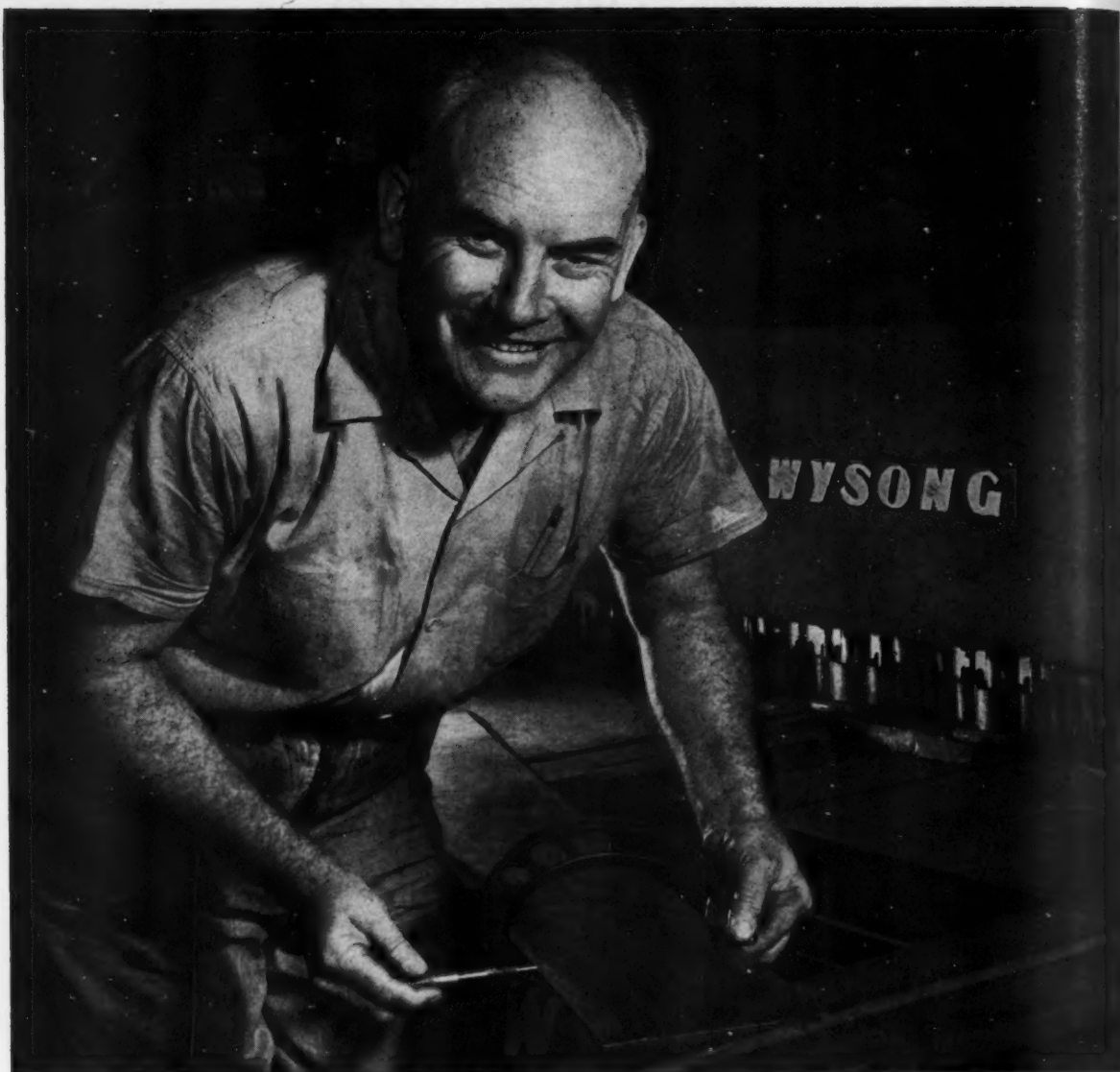
MINNEAPOLIS
Honeywell
Electronic Moduflow



Dealers !

For full details, call your local Honeywell supplier. Or write Minneapolis-Honeywell, Minneapolis 8, Minnesota.

ment
ber.



SHEAR SATISFACTION!

When you use a Wysong, you will know what I mean—a clean, *accurate* cut and complete confidence that the next cut will be just like it.

Wysong Shears are designed and built for that kind of shearing — rugged enough to withstand the shock of capacity shearing, rigid enough to maintain accurate alignment.

You will want to know about the rigid, hi-tensile castings; the drive unit which runs in oil; the non-repeat unit; the positive, compensating holddown; the ball-bearing precision back gauge; and other superior Wysong features. They add up to SHEAR SATISFACTION—for the boss and the operator, too.

Before you buy, investigate WYSONG ... it's MILES ahead! See your dealer or write factory for new catalog.

WYSONG

WYSONG AND MILES COMPANY • GREENSBORO, NORTH CAROLINA

Builders of Precision Machines For Over Fifty Years.

Sell More Heaters

THERE IS A JOHN ZINK HEATER FOR EVERY HEATING NEED

Prospects don't walk away when you show JOHN ZINK Heaters—they buy! For both home and industry JZ Heaters offer customers just what they need in heating: automatically controlled even heat, fuel economy, utmost safety, and quiet operation. JZ Heaters are available in four popular models and many sizes—upright or horizontal CENTRAL HEATERS, louvre or radiant WALL HEATERS, UNIT HEATERS and FLOOR FURNACES. All JZ Heaters are AGA approved for natural, mixed or LP Gas.



OFFER YOUR CUSTOMERS
JZ BRAND HEATERS!



Why JZ Heaters Are Money Makers

HIGH PROFIT—JZ Heaters bring a high margin of profit because less time is spent selling customers. JZ Heaters almost sell themselves.

EASY INSTALLATION—JZ Heaters are known for their ease of installation, takes only a short time when compared to other heating units.

EASY TO SERVICE—While compactly and sturdily built, all parts of a JZ Heater are easily accessible. Rarely are parts replacements needed.

JZ Heaters in Four Popular Styles

FLOOR FURNACES. JZ gas fired floor furnaces are available in five conventional and short models with input ratings from 30,000 B.t.u./hr. They become a complete one-package heating unit when equipped with safety pilot and automatic temperature control.

CENTRAL HEATERS. Available in Vertical or Horizontal forced air models. Can be installed in attic, closet, basement, utility room, under the floor, or as a suspended unit. From 65,000 B.t.u./hr.

UNIT HEATERS. Model UHS Gas-fired, fan type suspended heater. Completely automatic. Available in two styles, attractively finished, quiet, safe and easy to install. From 44,000 B.t.u./hr.

WALL HEATERS. WH-25 Recessed Wall Heater fits standard 2" x 4" stud partitions on 16" stud centers. Barely 58" high. Available in standard or radiant styles.

Write For Free Literature

JOHN ZINK COMPANY

4401 South Peoria

Tulsa 5, Oklahoma

why over 300 manufacturers use TECUMSEH compressors as original equipment



ACCURATE MACHINING TO CLOSE TOLERANCES—

In order to guarantee efficient operation, perfect fit of all moving parts is absolutely essential. To this end, Tecumseh has invested in the latest machine tools designed not only for high capacity but, more important, for accurate machining of all parts. Special machines have been designed such as the one shown above. This machine drills oil holes in crankshafts at the rate of 450 pieces per hour. Further as an indication of the accuracy we require in our shop, machined surfaces are held to a few millionths of an inch. Cylinder bores are held to .0002" out of round and out of taper combined, and shafts are ground to .0002". This combination of speed and extreme accuracy makes it possible for Tecumseh to provide our customers with a better compressor at the lowest possible cost.

These very close tolerances naturally require selective fit for the main sub-assemblies. In the photo at the right, you will note the selective fit of piston to cylinder. Down the line, rod to crankshaft, piston to pin, etc., are assembled in the same manner.

Close attention to machining and fit assure our customers that the Tecumseh compressor they receive in their plant will be a quality product. Proper production control results in better lubrication of all parts, assuring longer life and less wear to the compressor. Tecumseh's record of field rejects (less than 1% returned under warranty for complete systems) is proof of the manufacturing skill incorporated into each compressor. This is just one more reason why Tecumseh compressors give long years of dependable, trouble-free operation in the field. Check with your Tecumseh representative for full details.

Upper Left

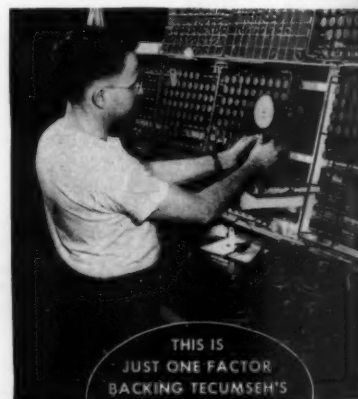
Multiple drill for boring and tapping crankshaft oil holes

Upper Right

Grinding and checking piston diameters

Below

Selective fit, piston to cylinder



THIS IS
JUST ONE FACTOR
BACKING TECUMSEH'S
UNRIVALED REPUTATION



TECUMSEH PRODUCTS

TECUMSEH, MICH.

Company

EXPORT DEPT.: P. O. Box 2280, 24530 Michigan Ave., W. Dearborn, Mich.

★ The world's largest
producer of Compressors
for the refrigeration industry. ★

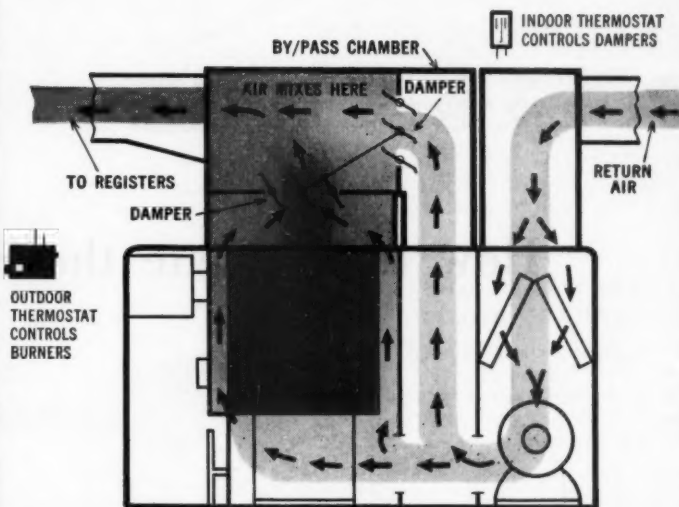
HOME OWNERS WANT COMFORT!

OFFER THEM THE "CONSTANT COMFORT" OF *ComFortrol* BY PASS HEATING®

NEW!

Waterbury
ComFortrol
BY PASS HEATING®

eliminates
"hot-and-cold" feeling
due to temperature
variation!



Provides constant flow of air at "just right" temperature

You offer a homeowner the ultimate in comfort with new Waterbury ComFortrol BY/PASS Heating. ComFortrol maintains *constant-comfort* in the home no matter what kind of weather prevails outside. In cold weather tests, less than one degree variation in floor to ceiling temperature was recorded over an extended period of time.

With new Waterbury ComFortrol BY/PASS Heating, the system di-

vides air returning from the rooms... heats part of that air... then mixes hot and cold together again in just the right proportions to give a *constant flow* of warm air. A continuous even temperature is maintained at all times. Hot or cold blasts are eliminated.

Homeowners **WANT COMFORT!** Beat competition by offering them the *constant comfort* of Waterbury ComFortrol BY/PASS Heating.



WORLD-FAMOUS

Waterbury



FURNACES AND
AIR CONDITIONERS

THE
**Waterman-
Waterbury
Company**

★
Minneapolis 13, Minn.

WHAT THE ASSOCIATIONS ARE DOING



SETTING THE STAGE for their seminar on heating, sheet metal and roofing are (from left) John Henke, J. C. Stark, R. J. Cronan and H. A. Sabathne



HOW TO FIGURE job costs is explained by Lou Demmler (right) to W. J. Keist (left) and J. C. Stark

How to Estimate the Selling Price

... of a warm air heating installation. A sample problem using costs, fixed and variable expenses and profit margin is given

"MARKUP is not profit," Lou Demmler, Pittsburgh wholesaler, told the dealers and contractors attending the annual convention of the Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, held March 25 and 26 in Beaver Falls. Mr. Demmler pointed out that if a product costs \$100 and sells for \$130, the markup involved is only 23 percent — not 30 percent. The base for figuring markup percentages is the selling price, he said. Thus, in the example given above, we divide \$30 by \$130 to obtain the markup, which is 23 percent. A dealer or contractor using such a markup and operating on an overhead basis of 23 percent would be making no profit at all, Mr. Demmler noted, and if his overhead percentage was more than 23 percent, he would be losing money.

The following figures were listed as examples of how to figure a warm air heating job: furnace, \$250; sheet metal, 500 lb at \$0.12 per lb, \$60; 11 registers at \$2 each, \$22; piping, wiring, etc., \$32. Total material cost, \$364. Labor, \$96. Total material and labor cost, \$460. Using a factor of 1.56 for a dealer with an overhead expense of 26 percent brings the selling price to \$717.60.

To determine the actual profit, Mr. Demmler reworked the problem this way: $\$460 \times 26$ percent equals an overhead expense of \$186.58. Thus, \$460 plus \$186.58 equals \$646.58. Therefore, \$717.60 less \$646.58 results in a profit of \$71.02 or about 10 percent.

Referring to his earlier statement that a \$30 markup on a cost price of \$100 represented a 23 percent markup, Mr. Demmler explained that a dealer selling at such a price would have suffered a loss because the calculated overhead (fixed plus variable expenses) amounted to 26 percent, which is not an uncommon figure for the dealer selling up to 100 furnaces annually.

Another Way to Figure a Job

To carry the subject of job estimating further, a seminar moderated by A. J. Sabathne and with dealer-contractors J. C. Stark, R. J. Cronan and John Henke forming the panel, offered suggestions on how they would determine the selling price of a specific type of job. Mr. Stark demonstrated his method of calculating the selling price of a warm air heating job. He listed

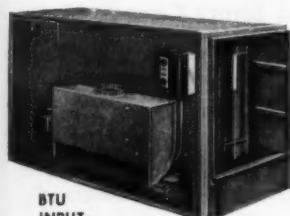


... wherever there's
GAS, there are

HEATWAVE

GAS FIRED
FURNACES

Today the answer is **EMPHATICALLY YES!** Wherever there's gas you'll find **HEATWAVE** Gas-Fired Furnaces, including central heating systems, floor furnaces and wall heaters!



BTU
INPUT:
60,000 80,000
100,000

THE HEATWAVE HORIZONTAL . .

For space saving installations in homes without basements; installs in attics, under floors, in service porches, attached garages; suspends from joists in homes with basements.

THE HEATWAVE COUNTER-FLO . .

for perimeter and under floor heating; can be installed in closet, alcove or utility room with minimum of duct work. Very economical installation.

BTU INPUT:
80,000
100,000
120,000



THE HEATWAVE FLOOR FURNACE . .

accomplishes the long-sought objective in floor furnace manufacture: **QUIET** operation, combined with efficiency, economy and long life

BTU INPUT:
27,500
35,000
50,000
65,000
75,000



THE HEATWAVE VENTED RECESSED WALL HEATER

Finest Heatwave quality, fits in 16" centered stud spacing. Ideal for homes, apartments, offices, stores and motels. Minimum installation cost.

BTU INPUT: DUAL WALL: 35,000
45,000

EVERY HEATWAVE MODEL:

- Factory Assembled
- Fire Tested
- Ready to Install
- Competitive in Price
- Cast Iron Burners
- Smart in Appearance
- Economical to Operate
- 10-Year Factory Warranty

Southwest manufactures a complete line of 2 and 3-ton Residential Air Conditioners for use as companion units with any Forced Air Furnace.

DISTRIBUTED BY
OUTSTANDING WHOLESALE
SUPPLY HOUSES!

WRITE OR
WIRE TO

THE HEATWAVE HI-BOY

designed to meet the need of better home heating at lower cost. Completely automatic. Built-in draft diverter. Cast iron burner.

BTU INPUT: 80,000
100,000 120,000
140,000 160,000



SOUTHWEST MANUFACTURING COMPANY

BOX 28

Subsidiary of the F. E. Myers & Bro. Co.

AURORA, MO.

WITH THE ASSOCIATIONS

(Continued)

the following: furnace cost, \$251; other materials, \$151; overhead (at 21.5 percent), \$86.43; labor, \$144. Total cost, \$632.43. Adding 20 percent of total costs (including labor and overhead), for profit, develops a selling price of \$758.92.

Mr. Henke explained the problems involved where custom made sheet metal products were ordered. He gave several examples of special equipment ordered by industrial customers and pointed out that only rough estimates could be offered. Contracts so drawn, he stated, could best be handled on a time and material basis until a fair approximation of the amount of material and labor required could be determined.

Mr. Cronan outlined the system he uses when estimating a built up roofing job and pointed out the pitfalls that an inexperienced estimator can avoid by following a step-by-step procedure to verify a correct take-off of all material needed.

Market potentials for warm air heating equipment were outlined by J. P. Field, vice president, Williamson Heater Co. Mr. Field said that 8 million gravity furnaces over 15 years old constitute a ripe market for the dealer looking for modernization work. The field for additional sales of modern accessory equipment also offers a most attractive market because of the many improvements being incorporated in this type of equipment, he said. He expressed surprise at the savings in fuel and the increased comfort he obtained in his own home when he replaced a five year old thermostat with a 1954 model.

Heat Pump Growth Indicated

The new designs recently incorporated in the latest model heat pumps have improved the coefficient of performance, according to J. C. Reynolds, manager, central region, air conditioning division, Westinghouse Electric Corp. Mr. Reynolds showed slides that described the operation of heat pumps and explained how they can perform equally well when the weather is either hot or cold. Mr. Reynolds also described the function of the electronic air cleaner and its use in residential applications.

The position the subcontractor finds himself in when the general contractor is attempting to shop bids was described by Joseph D. Wilder, executive secretary, Sheet Metal Contractors' National Association. Mr. Wilder suggested that subcontractors would do well to insist on the publication of the names of subcontractors being awarded jobs and the amounts of the bids submitted. This procedure would aid materially in reducing the practice of bid shopping that is now being followed by many general contractors, he said.

A film showing the recommended practices for installing built up roofing was presented by J. S. Means,

Johns-Manville Corp., and the competition between the government of the United States and private enterprise was described by Joseph Leopold, National Associated Businessmen, Inc. Mr. Leopold said that 27 percent of the goods and services needed by this nation were being provided by governmental departments and that private enterprise should be the source for these needs because industry pays taxes, whereas government services are tax free, resulting in a loss of revenue to the government.

Officers elected for 1955 are: E. W. Scarborough, president; R. J. Cronan, first vice president; Bernard Lawrence, second vice president; J. E. Harper, Jr., third vice president; E. W. Liebermann, secretary-treasurer. New directors are Glenn Meyers, Harry Rojohn, Carl Ammon and Walter E. Keist.

78 Attend Oklahoma Short Course

GROWING INTEREST in the rapid strides being made in the development of new and better techniques for estimating, installing and servicing warm air heating systems was in evidence at the college short course recently completed at Oklahoma A & M college. Dealers and their employees had the opportunity to crowd into a four day period many of the practices now being followed by leaders in the warm air industry.

Instructors from the university and industry covered such subjects as moisture control, heat loss, heat gain, duct layout, air distribution, electrical control circuits and insulation.

Plans for next year's college short course are now under way under the direction of the newly elected officers, who are J. R. Shipman of Oklahoma Natural Gas Co., chairman; R. R. Ellis, Collins and Gould, consulting engineers; Dan Ryan of Cooper Supply Co.; Robert J. Kubat, Hart & Cooley Mfg. Co.; and Robert R. Irwin, Oklahoma A & M.

Rochester Speaker Talks Insurance

ROBERT W. FORRESTER was the principal speaker at the April meeting of the Master Sheet Metal, Furnace and Roofers Association held at the Crescent Beach Hotel, Rochester. Mr. Forrester, a representative of the E. F. Ashley Co., spoke on the subject of contractors' liability insurance.

Indiana Wins Income Tax Battle

THE SHEET METAL and Warm Air Heating Contractors' Association of Indiana reports that senate bill 122 has been passed by the Indiana legislature. According to Frank Anderson, secretary of the group, this legislation brings the gross income tax to be paid by



THE ONLY Matched

COOLING TOWERS and CONDENSERS

The Halstead & Mitchell Cooling Towers you select are *matched* by design to work with the famous Halstead & Mitchell water-cooled Condensers. You need no longer buy a high-efficiency cooling tower to work with a low-efficiency condenser (or *vice-versa*) . . . a long-life cooling tower to work with a short-life condenser (or *vice-versa*).

Remember that every cooling tower you sell is planned to work with a water-cooled condenser—then you'll see why America's leading manufacturers of air-conditioning and refrigeration equipment have swung to Halstead & Mitchell for their original equipment needs in both these components.

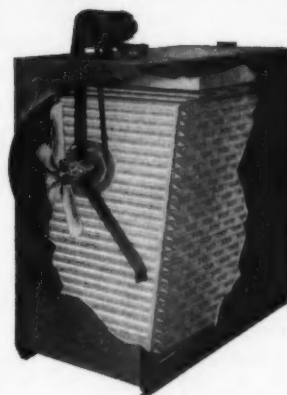
With cleanability you'll sell more. Why sell less?

20-Year Guarantee!

on the wetted deck surface against rotting or fungus attack

Only Halstead & Mitchell pressure-cresoting can provide a *guarantee* against immediate attack by fungus and marine parasites . . . or chemical deterioration from acids in water.

Added to this H&M exclusive are other major advantages. There's ultra-high efficiency in the gravity-type water distributing pan which eliminates extra pumping head required on spray type towers . . . and cuts down on water losses due to "atomizing" of water. And there's extra-long life in stainless steel fans . . . and sheet steel cabinets hydraulically painted with vinsynite, vinyl zinc and chlorinated rubber.



2 thru 120 TONS



1/3 thru
25 TONS

Lifetime Cleanability

The *mechanical* cleaning of H&M double-tube, counter-flow condensers means the simplest, least dangerous method of restoring new unit efficiency. Whether removing a heavy coating of sludge and scale, or a thin insulating film on the inner walls of the copper tubing, the mechanical cleaning tool restores heat transfer efficiency in a matter of minutes. The result is lowered discharge pressures . . . more heat carried off by cooling water . . . lower bills. *Only* the impurities are removed . . . the thickness of the copper wall remains intact, and the condenser gives extra years of peak service.

At Leading Heating and
Refrigeration Wholesalers
EVERYWHERE

Write for Detailed Specifications


Halstead & Mitchell

BESSEMER BUILDING • PITTSBURGH 22, PA.

WITH THE ASSOCIATIONS

(Continued)

Coming Events

June 7-10—Eastern Biennial Exposition of Oil Heat and Domestic Cooling. Hotel Statler, Boston. Thomas G. Colter, Chairman, Oil Heat Institute of New England, 839 Beacon St., Boston 15.

June 9-10—National Warm Air Heating and Air Conditioning Association, semi-annual board and committee meetings. Drake Hotel, Chicago. George Boeddener, Managing Director, 145 Public Sq., Cleveland 14.

June 9-11—Roofing and Sheet Metal Contractors' Association of Georgia, annual convention. General Oglethorpe Hotel, Savannah. B. L. Noblitt, Secretary, P. O. Box 1196, Augusta, Ga.

June 12-15—American Society of Refrigerating Engineers, semi-annual meeting. Hotel Schroeder, Milwaukee. R. C. Cross, Executive Secretary, 234 Fifth Ave., New York 1.

June 23-25—Carolinas Roofing & Sheet Metal Contractors' Association, annual convention. Ocean Forest Hotel, Myrtle Beach, S. C. Julian McKeithan, Secretary, Andover Iron Works, 112 N. Water St., Wilmington, N. C.

June 27-29—American Society of Heating and Air-Conditioning Engineers, semi-annual meeting. St. Francis Hotel, San Francisco. A. V. Hutchinson, Secretary, 62 Worth St., New York 13.

Nov. 28-29—National Warm Air Heating and Air Conditioning Association, board and committee meetings. Hotel Statler, New York. George Boeddener, Managing Director, 145 Public Sq., Cleveland 14.

Nov. 30-Dec. 1—National Warm Air Heating and Air Conditioning Association, annual convention. Hotel Statler, New York. George Boeddener, Managing Director, 145 Public Sq., Cleveland 14.

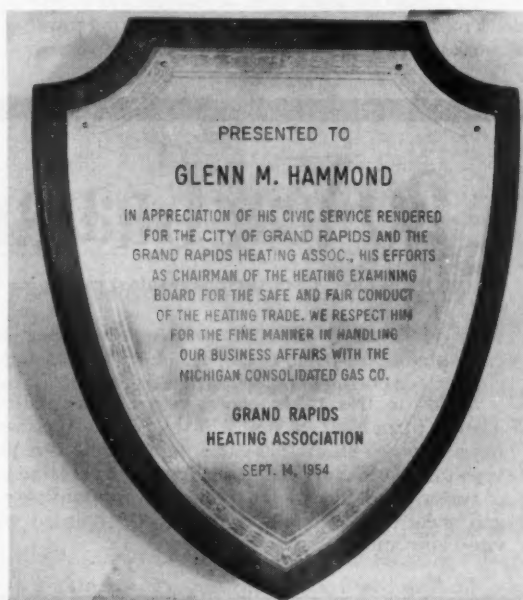
the sheet metal and warm air heating contractor down to a more equitable basis with that paid by other industries in Indiana. Mr. Anderson states that under the new law, sheet metal and heating contractors can qualify as "retail merchants" and are entitled to the retail sales rate of $\frac{1}{2}$ of 1 percent.

Detroit Group Studies Controls

PENN CONTROLS, INC., was the co-sponsor of the April meeting of the Detroit Warm Air Heating Association.

Feature of the evening was the presentation of *Controlorama*, the controls show developed by the Penn company to demonstrate its products.

The Detroit group reports that its service school is now in full swing. Forty-one students enrolled in the first series of classes and additional schools are scheduled for later dates.



GLENN M. HAMMOND was recently awarded a plaque by the Grand Rapids Heating Association in recognition of his services to the heating industry and to the city of Grand Rapids

Michigan Man Honored by Dealers

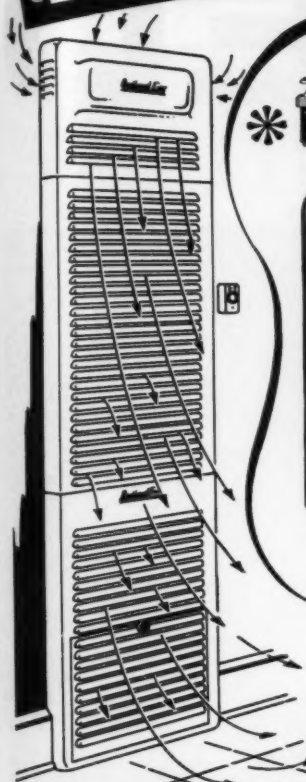
THE GRAND RAPIDS Heating Association and the Michigan Consolidated Gas Co. have for some time enjoyed an association of mutual benefit. In fact, Glenn M. Hammond, chief engineer for the Michigan Consolidated Gas Co., has been chairman of the Grand Rapids Heating Board, which is made up of members of the warm air heating dealers' association, their suppliers and municipal government representatives, and whose function it is to provide better heating code enforcement.

Mr. Hammond has also been instrumental in establishing an annual school covering the fundamentals of warm air heating. Dealers and their employees are invited to attend classes which are held one night each week for six weeks. There is no charge for the course. Those who attend regularly and pass the examination on the final night are awarded a certificate with a duplicate in the form of a wallet-size card.

NOW

ADD *forced-air* HEATING

... WHEN AND WHERE NEEDED



FOR HOME, OFFICE, MOTEL, STORE, SHOP, LODGE, APARTMENT, CHURCH, SCHOOL, GRILL, TAVERN OR HOUSING PROJECT.

SEPARATE HEAT CONTROL IN EVERY ROOM



NOW you can have real Packaged Heat... the '55 BRILLIANT FIRE with individual room control. Basic Units (single or dual-room models) come all ready to slip into wall, complete with built-in Safety Pilot and Draft Diverter. Packaged Forced-Air and Auto Control units add easily on job, minimize inventory. BRILLIANT FIRE is the Wall Furnace offering super-insulated Wall Box that telescopes to exact wall thickness. Has castiron Combustion Header, gas-tight Exchanger and high-efficiency, non-clog Burner (quiet on any gas). Too, it's packed with convenience-security features to simplify operating, regulating, cleaning. Engineered for All Gases, high altitudes. Beautifully finished, durable Beige baked enamel. Sized 17,500 Btu and up. A.G.A. approved.

* ADD BLO-AIR ANYTIME, OLD OR NEW INSTALLATIONS. MOUNTS SNUGLY ATOP WALL PANEL, SIMPLY AND IN SEPARATE CASING. CHANNELS WARM-AIR STREAM FLOORWARD, SALVAGES FRINGE HEAT. INSURES MORE LIVING ZONE COMFORT MINUS COLD BLASTS DURING WARM UP. POWERED BY 115 V. AC BLOWER, QUIET. SEPARATE SWITCH FOR SUMMER USE.

GET ALL THE FACTS . . . NOW!



WALL FURNACE

RECESSED VENTED ENCLOSED



MAIL COUPON today

THE OHIO FOUNDRY & MFG. CO.
STUEBENVILLE, OHIO
Send Catalogs (with price) as checked.

☐ VENTED HEATERS
☐ UNVENTED HEATERS
☐ WALL FURNACES

Name _____
Firm Name _____
Address _____ Zone _____ State _____
City _____

DEPT. AN-5

THE OHIO FOUNDRY & MANUFACTURING CO. . . . STEUBENVILLE, OHIO

THIS MAN IS **WANTED** IN PITTSBURGH!



HE'S WANTED BY FURNACE BUYERS BECAUSE HE SELLS PERFECTION WITH REGULAIRE*

He happens to be a heating dealer in Pittsburgh but he might just as well be a dealer anywhere else in the United States. Perfection dealers *are* wanted . . . and sought out . . . by furnace prospects because they offer the one furnace that makes the *big* difference in comfort. It's Regulaire!

Regulaire eliminates the "blow hot—blow cold" discomfort of on-off furnaces. Its thermally-operated regulating vane automatically insures a smooth flow of continuous warmth for all-over, **FULL-TIME COMFORT**. With Regulaire's constant warm air circulation, floors *can't* get cold.

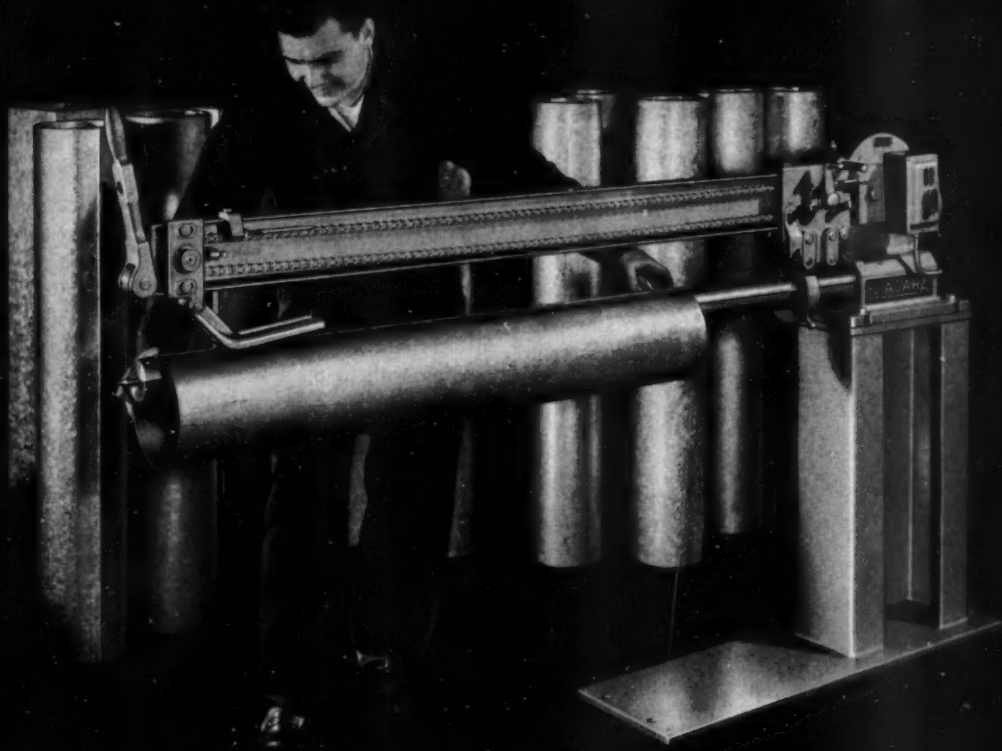
Simple, service-free Regulaire virtually ends call-backs. Only Perfection has Regulaire, today's big difference in furnaces. So if you're interested in getting on the "wanted" list with furnace prospects, let us show you how easy it is to become a Perfection dealer. Increase your share with Regulaire . . . and Perfection's Hi-Lo fire. **PERFECTION INDUSTRIES, INC.** (formerly Perfection Stove Company) 7616-E Platt Avenue, Cleveland 4, Ohio. *Pat. pending

Perfection YOUR HOME DESERVES
AUTOMATIC HEATING • AIR CONDITIONING

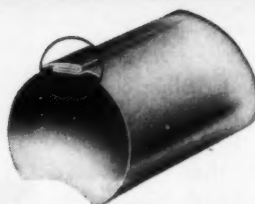
NEW!

NIAGARA UNIVERSAL POWER GROOVER

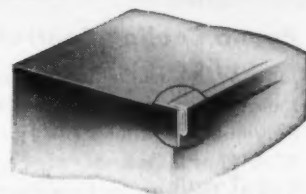
fast and versatile... for consistently accurate production



DOES BOTH!



SINGLE LOCK SEAM



PITTSBURGH LOCK SEAM

Here's a grooving machine that will enable you to do more jobs . . . better work . . . in less time . . . at less cost. With a nominal working length of 48", the Model 48-U groover can be equipped (optionally) for closing single lock seams or Pittsburgh lock seams or both (an original Niagara feature). Power driven, it enables the operator to work hour after hour without fatigue, while eliminating the noise, delays and un-

certainities of hand tools. Convenient controls provide fast, smooth operation to speed production.

GET THE FACTS



about this new machine and other Niagara grooving and seaming equipment. Write for illustrated Bulletin 76B today. It will be sent free . . . promptly.



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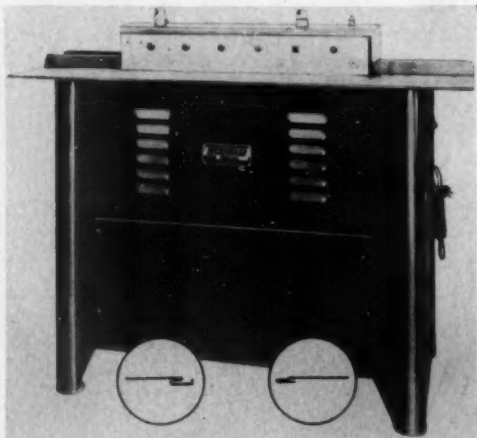
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EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available, see this month's New Literature department.

Snap Lock Machine

SNAP LOCK machine designed for sheet metal shop fabrication of receiver lock and offset lock, with no restrictions as to the diameter or size of duct — Lock-



former Co., 4615 W. Roosevelt Rd., Chicago 50. Unit fabricates metal from 24 to 30 gage, operates on any standard 110 or 220 v circuit. Size offers no restrictions because lock is made on flat sheet, the manufacturer explains.

Round Cooling Controls

LINE of residential heating-cooling and cooling only thermostats with round shape to harmonize with home interiors — Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. S., Minneapolis 8, Minn. Models T-87A (heating and cooling) and T-87C (cooling only) provide fingertip control. Switches permit choice between automatic cooling and system shutoff; heating, cooling or system shutoff; and cooling, system shutoff and constant or intermittent fan operation. Thermostats feature adjustable heaters for cooling anticipation. Dustproof sealed mercury switch electrical contacts are used in both models.

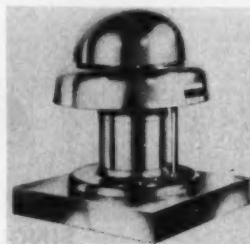
Thermal Insulation Coating

"LAGZ" protective coating for thermal insulation, compounded from rubbers and other resins to provide a coating said to be unaffected by moisture, oils, brine, solvents, corrosive gases, chemicals and weathering — West Chester Chemical Co., Box 39, West Chester, Pa. High mechanical strength, moisture and puncture re-

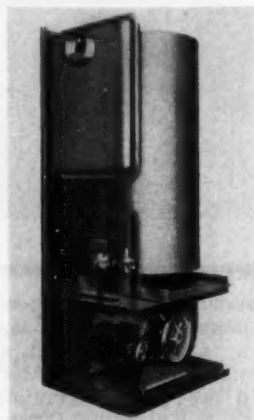
sistant properties provide high thermal efficiency and low maintenance costs, according to the manufacturer. Coating is manufactured in two grades: No. 1 is a medium viscosity material designed for use with 85 percent magnesia, calcium silicate, felt, rock wool, and asbestos; it can be applied by spraying, brushing or sponging. No. 2 is a high viscosity material for use with low temperature insulation such as foamed plastics, glass fiber and cellular glass; it is applied by brush or trowel. Non-flammable and non-toxic, the adhesive material can be used to fasten insulation to surfaces and to cement the edges of formed insulation together without the use of wire ties or bands.

Gas Furnace for Small Homes

"PACEMAKER" gas fired furnace with 85,000 Btu input — Waterman-Waterbury Co., 1121 Jackson St. N.E., Minneapolis 13, Minn. Unit occupies less than 4½ sq ft of floor space and is 5 ft 4 in. high. Among features reported are adjustable blower, open port burner and self-generating "Powerpile" dust-protected controls. A baffled body and radiator provide good heat extraction from the combustion gases, resulting in a low stack temperature. Unit is bonderized and electric seam-welded.



Above: Roof Ventilator



Right: Gas Fired Furnace

Power Roof Ventilators

TYPES RVS and SB power roof ventilators designed to meet specific requirements — Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41. Type RVS is for ventilating small areas. Used with or without duct, unit is all aluminum construction with centrifugal fan wheel and square base. Motor is sealed from air stream; automatic back draft damper is

The SIGNS You're Seeing EVERYWHERE...



AND...
There's
GOOD REASON!

When it comes to value, your builder customers have MONCRIEF pegged right!

The selection is greater, because the complete Moncrief line offers a type and size of unit for most any installation.

The price is lower, because ingenious design and mass production lower Moncrief's manufacturing costs.

The products are excellent, because Moncrief's 60 years of experience in the manufacture of heating equipment is applied to each and every Moncrief unit.

So whether it's Gas or Oil Firing... Basement, Utility, Horizontal, Counterflow or Gravity Heating Units... Basement, Utility or Counterflow Year 'Round Air Conditioners... Air-Condensing or Water-Condensing Cooling — your assurance of greater profit, in both new construction and replacement business, is with MONCRIEF.

Get the facts — from your Moncrief Jobber. He has the bigger, more profitable Moncrief line for your business!



Year Round Air Conditioner with Cover concealing Burner and Controls.



Summer Air Conditioner connected to Forced Air Unit.



Winter A. C. Unit



Cooling Unit with Blower Installed.

Counterflow Units.



Gravity Furnace



Horizontal Furnaces Gas or Oil.



Incinerator with or without Gas Burner



Gas Conversion Burner.



Gas Unit Heater.



Utility Unit



Gravity Furnace

APPROVED FOR GAS! APPROVED FOR OIL!

THE HENRY FURNACE COMPANY • Medina, Ohio

HEATING AND AIR CONDITIONING UNITS

MONCRIEF

FURNACE PIPE AND FITTINGS

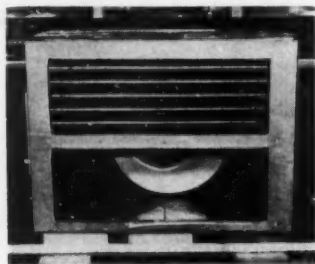
equipment developments

(Continued)

standard equipment. Type SB is of upblast design and features high capacity. Butterfly dampers open automatically when fan starts; when fan is off, dampers close by gravity for weather tight seal. Hood and damper are galvanized steel. Models are available with capacities up to 37,600 cfm.

Home Air Conditioner

MODEL B200A air conditioning unit designed for central air conditioning in residences at low cost — O. A. Sutton Corp., 1812 W. Second St., Wichita 2, Kans. Full 2 hp unit uses air cooled condenser and delivers 22,000 Btuh, according to the company. Unit may be installed in the attic, crawl space, garage or utility room with prefabricated insulated duct work. Condensing unit, coils and blowers are all contained in the one unit. Duct work for distributing air has been simplified; after the unit is placed, ductwork is



connected by folding pre-scored sheets of $\frac{3}{4}$ in. thick glass fiber board into rectangular shape and sealing the edge with special tape. Ductwork is covered with reinforced aluminum foil and coated on the inside with hard finish coating. Unit is powered with twin compressors in two separate systems. Twin systems are hermetically sealed. Low speed blower motor operation, squirrel cage blower, one piece condenser fan blade and rubber mounted motor and compressors are noise reducing factors, the company reports.

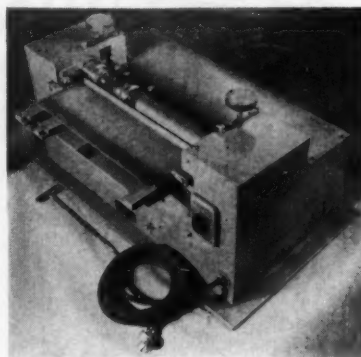
Air Filter Gage

AIR FILTER gage designed specifically for ventilating systems — Bacharach Industrial Equipment Co., 7000 Bennett St., Pittsburgh 8. Gage provides continuous accurate monitoring of the dust removal efficiency of air filters and operates on the principle of differential pressure measurement, the company states. When the pressure differential across the filter becomes excessive, a signal vane displays the words "renew filter". Gage is adjustable for any kind of ventilating or cooling system and any kind of filter; adjustment can be made on the job to operate the gage on any desired pressure difference between 0.06 and 3.5 in. of water differential pressure. Other ranges are available up to 10 in. of water. Gage features built-in electric switch

to operate a remote signal light or alarm; featured is a calibrator which permits setting the gage on the job so signal is actuated when pressure across the filter increases to twice the pressure differential when filter is clean.

Collar Rolling Machine

COLLAR ROLLING machine with capacity of 26 gage mild steel, said to roll a minimum diameter of 4 in. —



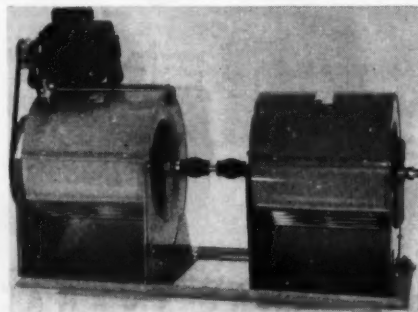
Fallsington Mfg. Co., Fallsington, Pa. Designed to produce a variety of shapes and sizes in collars quickly, the unit performs five functions by adjusting table gages: 1) bead, crimp and slit; 2) bead and slit; 3) bead and crimp; 4) bead; 5) slit in the flat.

Baseboard Diffuser

"AIR-TRIM" warm air baseboard diffuser engineered and designed to simulate regular "Trimline" baseboard—Vulcan Radiator Co., 26 Francis Ave., Hartford 6, Conn. Unit distributes warm air from a single duct outlet over extended wall areas and is designed to eliminate wall streaking and scorching. Diffuser is available in 2, 4, 6, 8 and 10 ft. lengths.

Dual Blower

"ECONO-PAK" blower designed to increase air flow width for installations where it is impossible to mount one large blower but necessary to have increased air



flow — Lau Blower Co., 2005 Home Ave., Dayton 7, O. Effect is achieved by joining two standard "Econo-

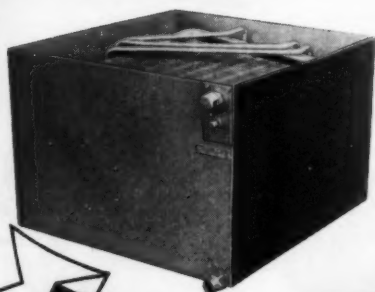
(Continued on page 156)



IT'S HERE!

clima-twin *Aire*
by **PEERLESS**

a **WATERLESS** air conditioner
with **REMOTE EVAPORATOR**



so quiet • so versatile • noise is out

Now . . . an air conditioner adaptable to more situations than ever before possible! First, it's air-cooled — **WATERLESS** — no plumbing connections needed. And the condensing unit, housing all the moving parts, is located outside the house. That takes what little sound there is in Clima-Twin-Aire completely out of hearing range.

The evaporator unit — the only part installed in the house — is a small package that may be installed in either a vertical or horizontal position. It goes above or below the furnace or in the duct work. The Clima-Twin-Aire utilizes the heating system blower . . . further reducing installation cost.

Here . . . at a price they can afford . . . is the air conditioner asked for by discriminating homeowners, builders, dealers, contractors . . . the **CLIMA-TWIN-AIRE!**



Peerless Furnace & Foundry, Inc.
1853 Ludlow Avenue, Indianapolis 7, Indiana
Gentlemen: Please rush me full information on your new CLIMA-TWIN-AIRE air conditioner.

Name _____
Company _____
Address _____
City _____ State _____

AA



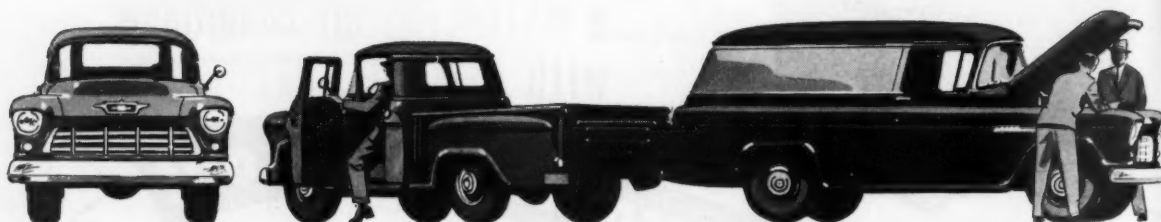
New models—more models—all loaded with new advantages!

NEW CHEVROLET

Task-Force

TRUCKS

Choose the model that's matched to your job. You'll get the most modern engineering features in the industry—and cut costs hauling or delivering! Your Chevrolet dealer is ready to supply full details of these important features. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

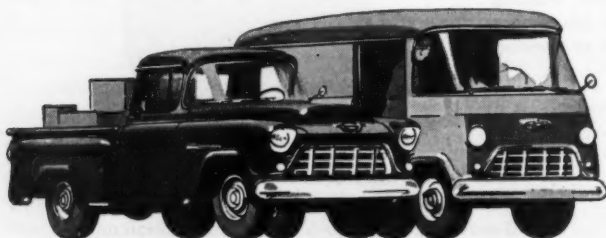


New Work Styling—New Cab Comfort and Safety!

For the first time, light- and medium-duty trucks with their own individual styling—specially designed for the job! New Flite-Ride cab (even more durable!) features a Sweep-Sight windshield, High-Level ventilation, and concealed Safety Step running board.

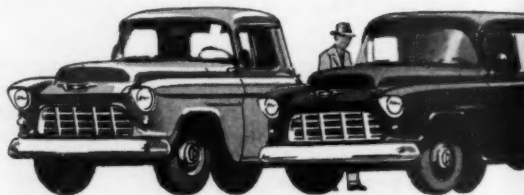
New Engines—New Ride!

A new 12-volt electrical system sparks all six new Task-Force engines. That means faster, surer starts; increased generator capacity. New suspension, front and rear, provides a smoother, more stable ride for both the driver and the load.



New Power Steering—Power Brakes!

Driving's easier and safer with these power helpers. Power Steering is available on all models as an extra-cost option. Power Brakes are *standard* on 2-ton models; optional at extra cost on all others. *Tubeless tires are standard on 1/2-ton models!*

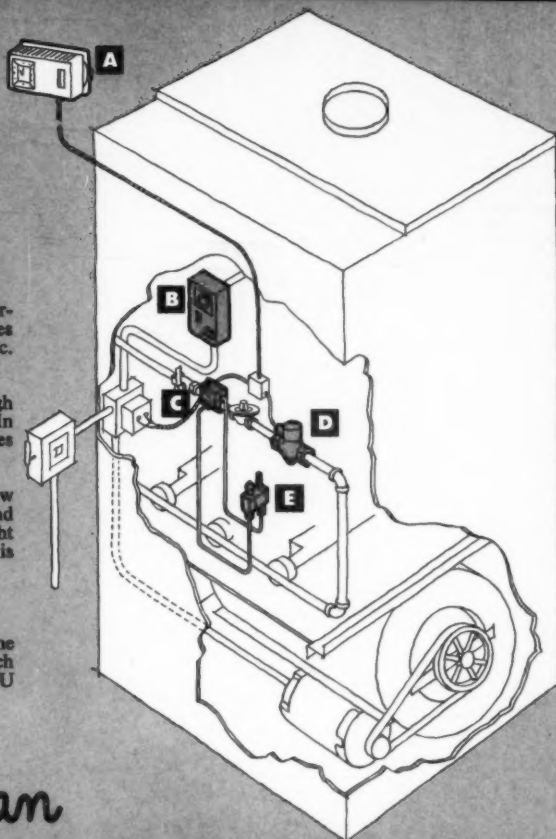


New Overdrive—Hydra-Matic!

Count on big gas savings with the extra-cost option of Overdrive, now available on 1/2-ton models. Truck Hydra-Matic (optional at extra cost on 1/2-, 3/4- and 1-ton models) makes driving easier and saves valuable time on stop-and-go delivery jobs.

typical all-Honeywell control system

- A** **Honeywell Chronotherm, TM850**, best-known clock thermostat on the market. Lowers room temperature at night, raises it in morning, at any desired hours, completely automatic. World-famous for accuracy and dependability.
- B** **Combination Control, L498B**, for furnace fan, plus high limit for burner. Easy to mount, easy to read and easy to set. In winter, fan-control is automatic. In summer, your customer uses convenient push-button to control the fan for ventilation.
- C** **Pilotstat, C588**, valve-type safeguard which cuts off gas flow to both pilot and main burner in case of flame-failure and requires manual reset. This model contains automatic safe-light feature to prevent flow of gas to main burner while pilot is being relighted. Can be used with all types of gases.
- D** **Solenoid Gas Valve, VA835**. See description below.
- E** **Pilot Burner, Q305**, a "single-port" pilot . . . the same flame lights the burner and heats the thermocouple which powers the Pilotstat. Less chance for clogging. A low-BTU burner, too . . . saves money for your customers.



Why it's best to use an All-Honeywell Control System



Solenoid Gas Valve, VA835, the low-cost, high-capacity valve, in which soft-disc construction and spring-loaded plunger assure dependable closing and opening at all rated pressures. Can be used with all gases and is available with or without manual opener. Conduit spud can be rotated for convenient wiring.

1. Your installation works better

Every Honeywell control is "system-engineered" to work with other Honeywell controls. This gives you maximum system efficiency.

2. You have the widest choice of controls and systems

Only Honeywell makes control systems for every type of heating plant and for all fuels. When you go all-Honeywell, you get the right system for every job. You're able to rely on *one supplier for all your controls*.

3. You get the best field service in the country

Need help in a hook-up? Puzzled by a performance problem? Your best and nearest answer is your Honeywell wholesaler or branch office. 70 years' experience in controls alone . . . plus the biggest field organization of all . . . puts *more control know-how at your service from Honeywell than anywhere else in the heating industry*.

4. You make more money

You spend less time on service calls, more installing new jobs. And jobs are easier to sell when you tell your customer "I use Honeywell controls throughout." The biggest merchandising and advertising program in the industry means that *Honeywell is the control-name your customer already knows*.

MINNEAPOLIS
Honeywell



First in Controls

112 OFFICES ACROSS THE NATION

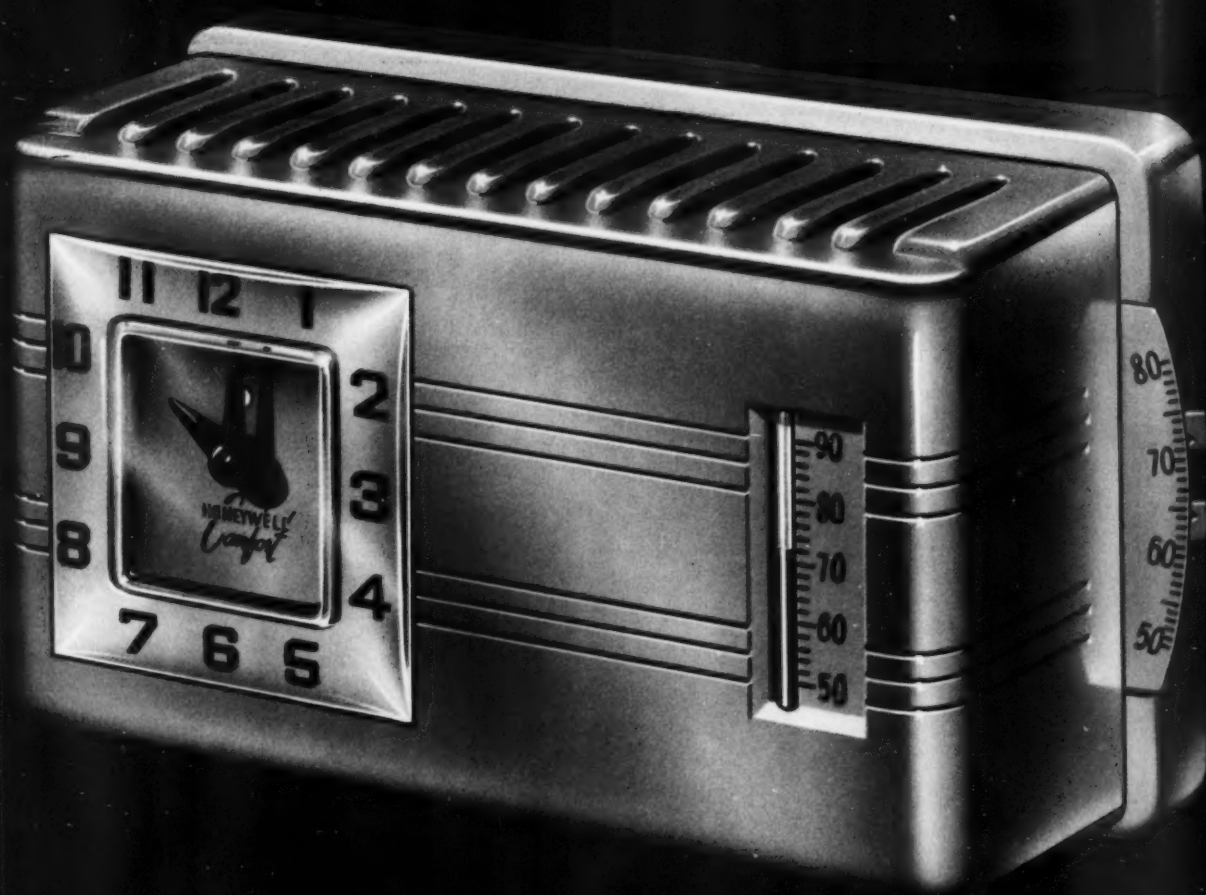
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A plus-profit product

*completely
automatic*

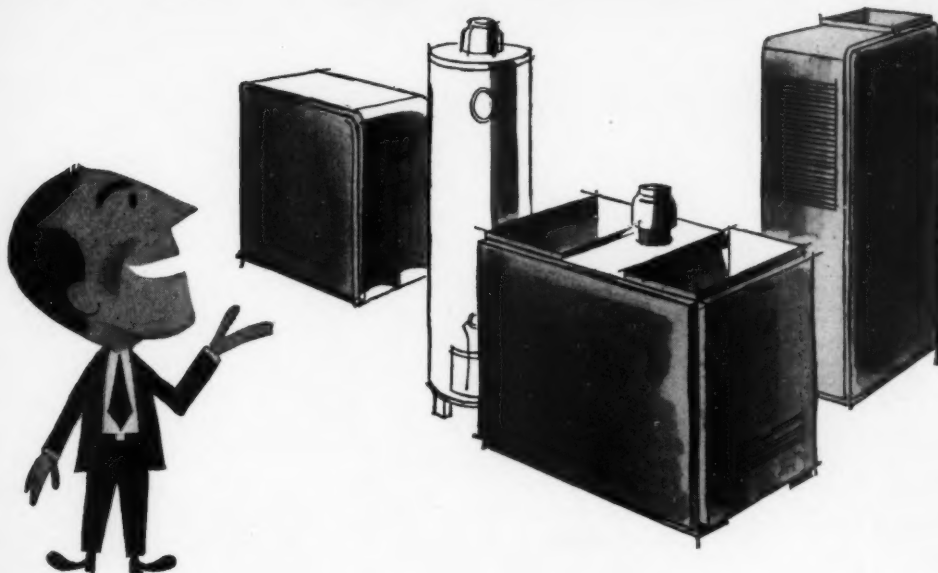


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HONEYWELL

the Honeywell

Electric Clock Thermostat

Sell the most complete line!



Furnaces, boilers, air conditioners—space, water and unit heaters! For every purpose, every purse—from one source. BRYANT, of course!



be "Mr. B"

(AUTHORIZED BRYANT HOME COMFORT DEALER)

Only "Mr. B"—the Bryant Home Comfort Dealer—has all 8 of these selling assets to build his business BIG:

1. A name customers know and want
2. The most complete line of automatic heating, air conditioning, water heating
3. Quality equipment for every market
4. Exceptional distributor service
5. Professional sales training
6. Personalized selling tools for you
7. National advertising featuring you
8. Co-op "Mr. B" ads for local papers

For bigger profits now, for a secure and prosperous future—see your Bryant Distributor. Ask him about Bryant's big "Mr. B" action program, and how it can make sales and money for you!

bryant®

AUTOMATIC HEATING
AIR CONDITIONING
WATER HEATING



GALVANIZED SHEETS

Top Quality... Quick Delivery

When sheet metal jobs call for galvanized, you want quick delivery. And you want a sheet that forms readily . . . gives long-lasting protection against corrosion.

That's what you get when you call Ryerson, dependable quality, fast service.

Our stocks of galvanized sheets are large; we can offer you many gauges in a wide range of pattern sizes, as well as in sizes cut to your order. These sheets have a uniform coating, clean and bright, which will give your jobs permanence plus a pleasing appearance that your customers will appreciate. And one good job always leads to another.

There's convenience in calling Ryerson, too. In addition to galvanized, you can get quick shipment of most every other steel requirement—hot and cold rolled carbon steel sheets, stainless, Ry-ex expanded metal, bar size angles, etc. Just call your nearest Ryerson plant for fast action.

• • •

Need metal-working machinery or tools? Again you can deal with the same convenient source. Your nearby Ryerson plant supplies every type used by sheet metal shops.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N.C. • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



What Kind of a Heating Dealer Is a "Heating Dealer?"

ACCORDING TO the Census of Housing (1950 being the latest) there were over 40,000,000 "dwelling units" in the U. S. at that time — there are more now, of course. However, the term "dwelling unit" means not only a single-family house but an apartment as well. Also, some dwelling units do not have central heating.

If the figures are further broken down (as was done in a special Bureau of the Census analysis financed by the American Artisan) it is determined that in 1950 there were 12,015,264 single-family structures with central heating, of which 8,301,922 had warm air and the rest steam or hot water. Today, the figures would show the even greater popularity of warm air heating for homes, as its wider application and advantages become more and more apparent each year.

While homes heated by other than warm air systems are a definite part of the potential market for residential cooling — as are many homes without any type of central heating at all — the figures quoted explain one reason why the warm air heated home is the *really important* market for central summer air conditioning.

A second reason is perhaps even more obvious. An economical, feasible cooling system for a home — at least as we know it to date — depends upon duct distribution of the conditioned air.

Thus, while homes with other than warm air heating should not be ruled out of the big home cooling potential, it is the home enjoying the benefits of warm air heat that represents the important residential cooling market both now and in the future. Such homes are the ones in which central cooling has made and is making the rapid strides which have aroused the interest of almost everyone concerned with heating and air conditioning.

As was pointed out in a recent talk by a national authority on marketing and distribution in the heating and air conditioning field, "the heating dealer is the logical outlet for cooling equipment sales." While this authority said "heating dealer" — without saying in so many words "warm air heating dealer" — he pointed out in this same talk that the heating dealer "understands air distribution systems, knows how to calculate heat losses and air flow through ducts and knows how to fabricate duct work." Obviously, these remarks would define a "warm air heating dealer." However, in reporting his talk in the March issue of the Artisan, we stuck to the facts, ma'am, and didn't put any words in the speaker's mouth.

It therefore disturbed us a bit to see in another magazine — serving an entirely different field than the one with which the Artisan has been so closely identified for so many years — this authority being quoted as specifying an entirely different kind of "heating dealer." What's more, his "amplified" statement was published in this other magazine as a direct quotation. It wasn't what the man said — we were there — and from his further remarks it was just about the opposite of what he meant.

How this other publication distorted a direct quotation doesn't change the facts of who has, is and will continue to serve the big residential cooling market. There's enough confusion already, though, without adding to it by misquoting anybody — and to that we take strong exception.

Planned Promotion Program

Dealer's Key to Heating,



PROMPT SERVICE afforded through two-way radio contact between office and trucks helps firm maintain a reputation for efficiency



FIVE INCH round duct is laid in radial pattern and tarred before concrete slab is poured

Sales records in perimeter heating systems and room air conditioners have been traced to a dynamic selling campaign by a dealer and his salesmen who are sold on their products

A WELL PLANNED year 'round promotion program has paid off in sales records for heating and cooling equipment at D. J. Potter Co., Reading, Pa.

Typical of the company's aggressive methods was a promotion which sparked a drive on room air conditioners. The firm offered a trip for two to Bermuda to the entrant who guessed what the temperature would be on July 4 and submitted a good essay on *Why I want an air conditioner*. Thousands of entries poured in and Mr. Potter estimates that 50 or 60 of the room units sold were directly traceable to interest developed by this promotion. By chance the thermometer dropped to 70 on July 4th and, since no one even came near this figure, the firm gave scores of \$25 prizes for good essays instead of the vacation.

"Advertising and promotion efforts can do a good part of the selling job in something like room air conditioners, but in heating all the ads can do is attract prospects," Mr. Potter believes. "It's really up to the salesmen to keep the business going."

Sales Grow from Planned Schedules

"The most important factor in a heating salesman's success is proper organization of his time," Mr. Potter says. "Two men may be equally well trained in planning jobs and in salesmanship; they may have equal natural abilities and work equally hard. Yet one man may outsell the other considerably because he plans his time better. A good heating salesman should sell between \$60,000 and \$100,000 a year. By canvassing a planned number of houses each day, calling on a certain number of users regularly, following up every lead and following through with surveys and presentations, a man

Cooling Sales

can get into that bracket quickly and exceed it as the years go by."

In his training of salesmen, after technical competence and acceptable personality have been established, Mr. Potter tries to develop this sense of organization in the new man. His compensation plan for new salesmen reflects this effort.

"We follow three definite steps in each sale — the survey, the presentation of the job plan to the prospect and the demonstration of our job in a satisfied customer's home," Mr. Potter says. "Hence we build the new salesman's drawing account on his performance of these steps. We pay him \$5 for each survey, another \$5 for each job proposal he makes, and \$10 more for each visit he makes with a prospect to an installed job. If he goes through those steps and doesn't make a sale he should waste no more time with that prospect but go on to the next. We limit that drawing account for a man to \$400, at which point he should be earning commissions."

A man soon learns to qualify his leads, concentrating his best time on the more likely prospects. Potter salesmen get many of their leads from the firm's advertising and oil burner service followings. They develop other leads in the field by canvassing and by visiting past customers. The firm pays users \$10 each time they recommend a prospect who buys a heating job. Assigning specific territories to the salesmen simplifies the job of distributing leads and helps each salesman develop a reputation in his part of the city.

New Approach Gets Results

"Selling perimeter heating has improved the salesmen's results," says Mr. Potter. "They now sell about two of three prospects. Having something new, like heating without drafts, to talk about gives them a fresh approach instead of repetitious talks on quality and service."

A testimonial to the effectiveness of Mr. Potter's theories is the fact that the company has built its sales of perimeter warm air heating systems to about 170 jobs a year.

Prompt and reliable service are other factors which



TRAINING SALESMEN to sell heating is an important phase of the firm's operation. D. J. Potter leafs through some sales aids at a regular sales meeting



TECHNICAL TALK informs customers of comfort conditions which can be expected from heating and air conditioning installations

have played a part in gaining an enviable reputation for the firm. For example, two-way radio contact between trucks and office has more than paid for itself in establishing a list of satisfied customers.

Mr. Potter was a tough prospect himself back in 1948 when a group of manufacturer engineers were trying to sell him on perimeter heating. Partially convinced, Mr. Potter put in some trial installations, asked users about their experiences, ran smoke tests and studied costs.

Finally sold, Mr. Potter went out to sell perimeter heating to builders and homeowners in the Reading area which has a population of 250,000. He used newspaper and radio advertising, displays at home shows and fairs, surveys, demonstrations and testimonials on installed systems. His firm sold 50 perimeter jobs in 1949. Since then sales have increased steadily, with the *no draft heating* theme proving effective in both the new construction and

Testimonials of satisfied customers are salesmen's number one selling tool

modernization markets. About 60 percent of the jobs are modernizations.

Versatility Builds Large Market

The installations that provide perimeter heating vary somewhat in different types of buildings. Here are some of the applications the firm has made:

In a concrete slab home, a counterflow furnace is placed in a central utility space and the air is distributed through 5 in. round ducts buried in the concrete. The ducts are laid out on the ground in a radial arrangement and the concrete poured over them after covering the openings where the fittings turn up at the outside walls. The standard galvanized round duct used is tarred before the concrete is poured.

For the basement home, the standard furnace is placed in the basement. A square trunk line leads to 5 in. oval runouts, terminating in all the walls. A telescoping round duct in 12, 18, 24, 30 and 36 in. lengths speeds work on the job. It takes an average of 15 minutes to put in a complete run including register, box and lateral runout. The registers and boxes are placed above the baseboard on the outside walls.

For crawl space homes it is practical to use overhead ductwork. The furnace is placed in a utility room and the 5 in. round ducts radiate out over the ceiling, dropping down the outside walls to registers about 12 in. below the ceiling. In this case, oversize registers are used to force the air down along the walls. One central return is placed in a closet, with the intake close to the ceiling.

In large structures such as commercial buildings, churches and schools, the typical refinements that may be necessary can easily be provided. In one church job, for example, the firm put in four furnaces delivering a total of 400,000 Btuh to four separately controlled zones.

For modernization purposes, most buildings can have perimeter heating installed at reasonable cost. In most cases outside baseboard registers are used to eliminate cutting of the outside wall. All new and modernization jobs are designed so that summer cooling units may be added later without extra ductwork expense, and in some cases year 'round air conditioning has been sold as part of the original installation.

Personal Experiments Prove Valuable

When Mr. Potter was considering the possibility of going into perimeter heating on a regular basis he put in a few jobs to see how manufacturer claims held up in practice. He kept a close check on layout problems and installation costs when doing the job. Then he ran smoke

tests to check air movement. Finally he checked with occupants to see if there were really "no drafts, no hot spots, and full utilization of all space." In selling the new method to his own salesmen, he used the same procedures to prove the effectiveness of the perimeter heating systems.

"The salesmen took to the idea without hesitation," Mr. Potter recalls. "They didn't have to learn too much that was new — in fact, the layout work is much easier. The cost of doing the job this way, using the telescoping round duct, is usually no more than in a standard system. And the salesmen knew that the idea of draft free heating for their prospects' homes would help them increase their modernization sales."

Customers Do Selling Job

Selling perimeter heating to the public was a more challenging job. The newness of the idea made it hard to sell in 1949. That year, however, a home show display by the Potter Co. created enough interest among builders and homeowners to help sell 50 jobs. An aggressive advertising campaign which has helped increase sales over the years was supplemented by the enthusiasm of occupants of homes where the Potter Co. installed its first perimeter heating jobs in creating the growing demand.

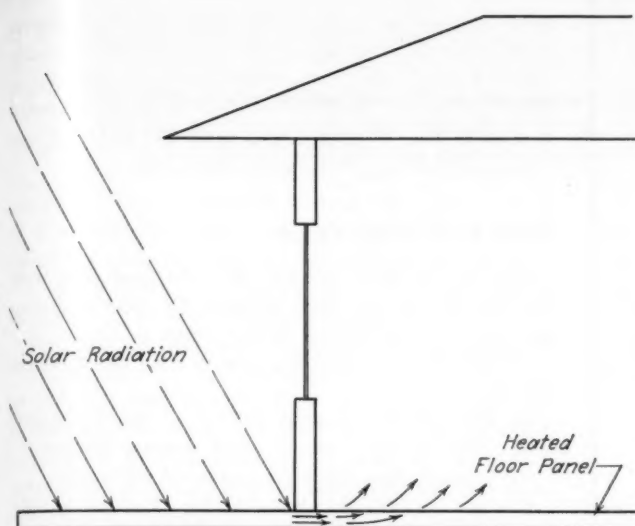
In selling their jobs, the firm's salesmen are now able to present a sales pitch for perimeter heating which employs testimonials of the many satisfied customers accumulated as the result of past promotions.

The salesman goes on to point out that such a job doesn't cost any more than others, that the Potter reputation for service is well known and that suitable terms can be arranged.

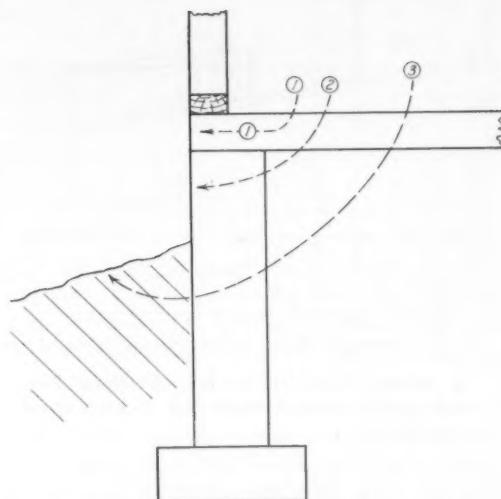
Documentary Evidence Provides Clincher

To back up these arguments, the company collected enough documentary evidence in a survey of past jobs to last it for years. The occupants of 120 homes were asked about their experiences with drafts. Of 80 homes equipped with perimeter heating, not one was reported to have drafts.

The material collected in this survey, in addition to providing ammunition for salesmen, has helped the firm accent proof rather than claims in its advertising. Specific cases and results are cited in newspaper, radio and TV ads. At home show and fair displays, which have been the firm's most effective promotion method for perimeter heating, salesmen are on hand to supplement the displays of furnaces and registers with case histories and testimonials.



1 HEAT FLOWS through concrete patio floor to interior of the house



2 UNINSULATED SLAB provides three paths for heat to escape from the house

Evaluating the effects of

Slab Floors in Cold Climates

S. Konzo and H. D. Bareither
University of Illinois

A set of standards . . .

. . . is proposed in these articles by which to judge the construction of residences, from the standpoint of the heating contractor. In this issue the discussion will center around the slab floor and its effect on heating comfort and heating plant performance.

PRIOR TO 1940 most of the slab floors for residential structures were found in the warmer sections of the country. These slab floors were found to be less costly to build than the more elaborate foundations for crawl space and basement structures. In mild climates the absence of edge insulation around the slab floor did not create any serious problems. Since 1945 the increasing popularity of low cost structures resulted in a noticeable increase in slab floor structures in the colder climates. This trend was accompanied by reports of complaints from widely scattered areas of the country

- on heating efficiency
- on fuel costs

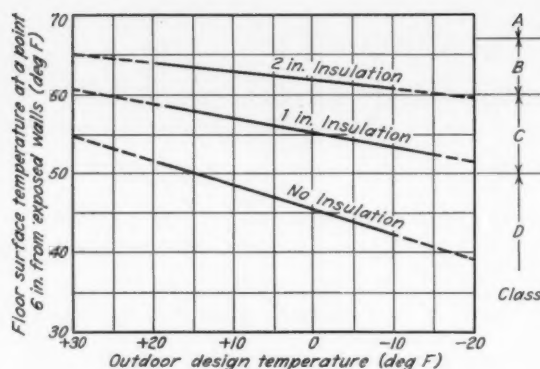
concerning cold floors, high fuel bills, and even condensation difficulties on the floor surface.

One of the early studies of the thermal characteristics of slab floors was that by R. S. Dill and his associates at the National Bureau of Standards. These experiments showed that even in the comparatively mild climate of Washington, D. C. the edges of the floor slab became cold as the temperature fell, and that insulation applied to the edge of the slab would improve conditions. Messrs Bareither, Alberty and Fleming at the University of Illinois verified the fact that edge insulation was necessary for floor slab construction in the colder regions of the country.

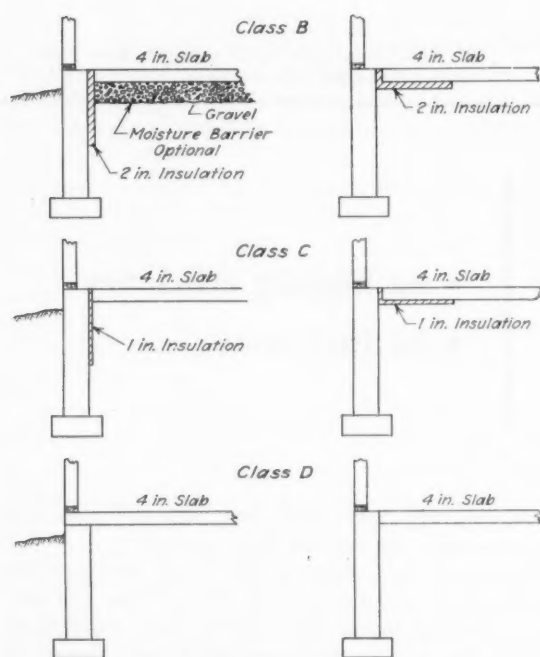
Briefly stated, the difficulties that have been experienced with slab floors in the colder climates can be summarized as follows:

- 1) The floor surface around the entire outer margin of the house is cold in winter, unless the floor slab is heated from below.
- 2) The fuel bills for slab floor houses were higher than those for similar houses built without slab floors, especially when the floor was heated.

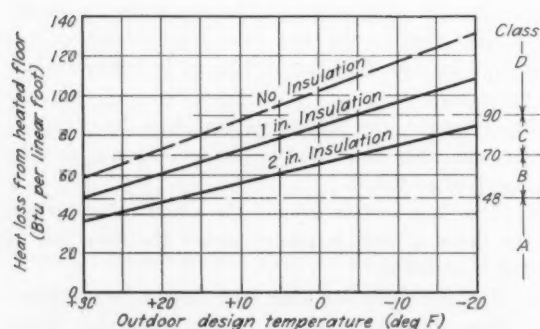
In the warmer climates complaints have arisen that summer cooling loads for air cooled structures have



3 SURFACE TEMPERATURES of unheated floor slab increase proportionately with thickness of insulation



4 CLASSIFICATION OF unheated floor slabs is dependent on the amount of insulation



5 HEAT LOSS from the edge of a heated floor slab varies considerably with different design temperatures

been large as the result of heat flow from the outdoors to the cooler interior. This will be particularly noticeable where a single slab floor serves both the interior of the house and an adjoining porch or patio, as illustrated in Fig. 1. The difficulties arise from the fact that concrete is a relatively good transmitter of heat.

Three Paths of Heat Loss

The studies have indicated that the heat flow from the interior of the house through the floor slab can take place through three distinct paths:

- 1) Directly through the concrete slab, as shown in Fig. 2.
- 2) Through the exposed portion of the foundation wall, either of solid concrete or of masonry blocks.
- 3) Through the embedded portion of the wall.

For the construction shown in Fig. 2 there is little to hinder the flow of heat through the path marked by 1. As might be expected from a study of the three paths shown in Fig. 2, the heat flow occurs more readily through path 1 than through path 2, and more easily through path 2 than through path 3. In order to insulate the floor slab effectively, therefore, the remedy consists in stopping the flow through path 1 and then path 2. The heat flow through path 3 is a devious one and relatively difficult to reduce. The obvious methods of reducing the flow through path 3 consist of:

- a) The use of an insulating concrete floor.
- b) The use of an insulating concrete subfloor on top of which is poured an ordinary concrete floor.
- c) The use of tile or other insulating masonry material below the entire floor slab.
- d) The use of hollow concrete blocks in place of a solid concrete wall for the foundation.

It should be realized that when insulation is placed to retard the flow of heat through path 3, a slightly increased heat flow is liable to occur through paths 1 and 2. The research conducted by Mr. Bareither and his associates showed that efforts to reduce the flow of heat through path 3 were not practical.

The floor surface temperatures as measured at a point 6 in. away from the exposed walls are shown in Fig. 3, as summarized from the research of Mr. Bareither and his associates. The following conclusions can be drawn from the summary curves:

- 1) Warmest floor surfaces were obtained with 2 in. thick edge insulation. The 1 in. thickness gave results that were markedly better than those obtained without any edge insulation.
- 2) A 2 in. edge insulation for a - 10 F design climate gave results comparable to a 1 in. edge insulation used in a +30 F design climate. Similarly, a 1 in. thick edge insulation for a - 10 F design climate gave about the same floor temperatures as no edge insulation in a +25 F design climate. In other words, thicker edge insulation is desirable in colder climates.

The temperature ranges indicated by letters A,

B, C, D (Fig. 3) show the arbitrary classification proposed for unheated floor slabs. The classification scheme that is spelled out in the following paragraphs is basically for cold climate conditions, since for extremely mild climates the use of edge insulation may not prove necessary. An unheated floor slab, no matter how well insulated it may be, will not provide the floor comfort of a heated slab. Hence, in Fig. 4 no illustration is shown for class A. Even the best of slab constructions can be considered to be only as good as a Class B designation. The same applies to Classification 1.

For unheated floor slabs the classification scheme was based on the floor surface temperatures alone and not on the heat loss from the floor. However, in the case of heated floor slabs, in which means are provided to heat the floor directly, the problem is not one of maintaining a warm floor surface. Whether the floor slab is heated by warm air ducts below the floor, a perimeter duct at the edge of the floor slab or hot water coils embedded in the concrete, the floor surface temperature can be maintained at 70 F or higher.

Climate vs Edge Insulation Thickness

The chief problem with a heated floor is that the heat loss from the floor slab can be exceedingly large.

The paths of heat flow through a heated slab are the same as those shown in Fig. 2 except that the magnitudes are larger. Edge insulation which was considered to be of importance with unheated floor slabs becomes of even greater importance with the heated floor, since the temperature difference between the floor slab and the outdoor air is increased. The heat losses from the slab floor for various outdoor design temperatures which were replotted from Mr. Jamieson's data are shown in Fig. 5. The following points are of interest:

1) The least heat loss from the floor slab occurred with 2 in. thick edge insulation. The heat loss with 1 in. thick edge insulation was lower than that obtained without any insulation.

2) The difference in results between 1 in. vertical and 1 in. L type insulation was not significant. The L type insulation keeps the insulating material drier than the vertical insulation. However, since the cost of installing the insulation is less with the vertical position, it is more commonly used.

3) The 2 in. insulation when exposed to a - 10 F design temperature gave the same result as a 1 in. edge insulation exposed to a +7 F design temperature. Similarly, a 1 in. edge insulation exposed to a - 10 F design temperature gave the same heat loss as a slab without insulation exposed to a +4 F design temperature.

CLASSIFICATION 1 — UNHEATED FLOOR SLAB

Class B

- a) Insulation is located at vertical edge of floor inside of foundation wall, or is placed in L shape. The material is 2 in. thick and is water and decay resistant. It is also of sufficient strength to withstand crushing during the pouring of the concrete.
- b) The ground is sloped away from the foundation wall.
- c) A layer of gravel is provided below the concrete slab. Use of a vapor barrier is optional. In the first place it is doubtful whether a 15 lb roofing material will

endure the exposure, and in the second place the most effective means of providing for dryness would be to:

- 1) slope the ground away from the house;
- 2) build the house above the level of the surrounding terrain;
- 3) avoid building the house in a hollow where all the water will tend to collect. If water will drain to the site, so that a high water table can result, then drain lines around the footing should be installed.

Class C

- a) Same as for Class B, except that insulation is 1 in. thick.

Class D

This class includes constructions which do not meet the specifications above, and includes the following types:

- a) Cap floor slab construction as shown in Fig. 4.
- b) Omission of edge insulation as shown in Fig. 4.
- c) Use of edge insulating material which will not withstand exposure to moisture conditions.
- d) Poor drainage caused by failure to:
 - 1) elevate the floor slab above the surrounding terrain;
 - 2) provide proper drainage from the foundation, both of surface and sub-surface water table.

CLASSIFICATION 2 — HEATED FLOOR SLAB

Class A

The heat loss from the floor slab should not exceed 48 Btuh per linear foot of exposed edge. The 2 in. thick edge insulation does not meet this requirement except for design outdoor temperatures higher than +18 F.

Class B

The heat loss from the floor slab is not less than 48 and not greater than 70 Btuh per linear foot of exposed slab edge. For a design outdoor temperature of zero F and colder, the following construction comes within this classification:

- a) Two inch thick insulation is located at the vertical edge of the floor inside of the foundation wall, or is placed in L shape. The insulation is both water and decay resistant and possesses sufficient strength to withstand crushing during the pouring of concrete.
- b) The ground is sloped away from the foundation wall.
- c) A layer of gravel is provided below the concrete slab. Use of a vapor barrier below the main floor slab is optional. It is extremely doubtful whether a 15 lb roll roofing will endure for any length of time. Below perimeter ducts, embedded ducts, and hot water pipes the

use of 55 lb roll roofing or an equivalent is recommended as a vapor barrier. The most effective way of providing for dryness is to:

- 1) slope the ground away from the house;
- 2) build the house above the level of the surrounding terrain;
- 3) avoid building the house in a hollow where all the water will tend to collect. If the water drains toward the site and a high water table can result, then drain lines around the footing should be installed and the water removed from the site.

Class C

The heat loss from the floor slab is not less than 70 and not greater than 90 Btuh per linear foot of exposed slab edge. For a design outdoor temperature of zero F and colder, the following construction comes within this classification:

- a) All conditions are the same as for Class B except that the thickness of the edge insulation is 1 in.

Class D

The heat loss from the floor slab is greater than 90 Btuh per linear foot of exposed slab edge. This class includes constructions which do not meet the specifications in Classes A, B, or C, and includes the following types:

- a) Cap floor slab construction as shown in Fig. 4.
- b) Omission of edge insulation as shown in Fig. 4.
- c) Use of edge insulating material that will

become water-logged or will deteriorate with dampness.

- d) Poor drainage that results in high water table below the floor.

The proposed classification for heated floor slabs is shown in Fig. 5, and is based on an arbitrary range of heat losses from the floor. Because of large heat losses in an extremely cold climate, even the 2 in. edge insulation is considered to lack the requirements for a Class A construction. Our proposal is that a Class A construction should not have a heat loss in excess of 48 Btuh for each lineal foot of exposed edge.

The arbitrary limits of floor slab edge loss become significant when we apply them to ordinary small house construction. Assuming a 24 × 36 ft, one-story house

we can expect that the design heat loss of the house will vary from about 41,000 to 52,000 Btuh depending upon the extent of weatherproofing used. The various classifications of the floor slab would then give the percentages of total heat loss shown in Table 1.

TABLE 1—FLOOR SLAB classifications by heat loss

Class	Edge Loss (Btuh)	Percentage of total heat loss	
		Average House	High heat loss house
A	not over 5760	not over 14 percent	not over 11 percent
B	not over 8400	not over 20 percent	not over 16 percent
C	not over 10,800	not over 26 percent	not over 21 percent
D	over 10,800	over 26 percent	over 21 percent



LOW CONTOUR, large glass area and changing weather conditions make for stringent heating demands at Pius X school. Zone heating and forced ventilation are provided by 16 furnaces

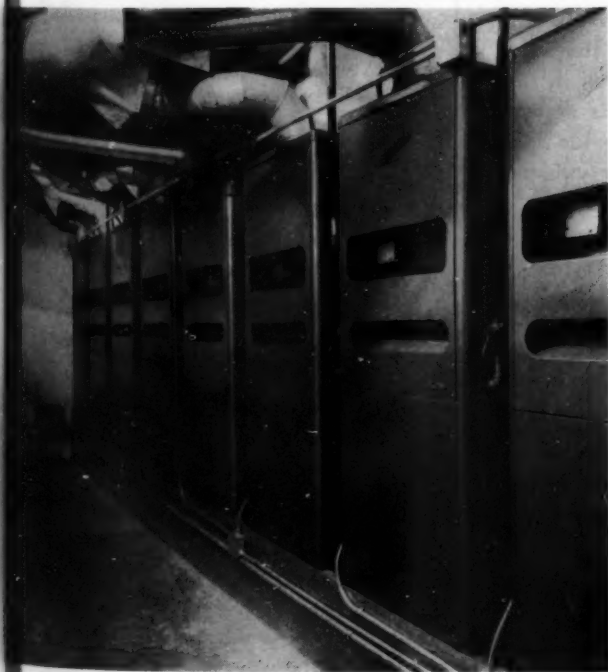
16 Furnaces in School

Meet Variable Weather Demands

By Glenn A. Barnes

Sales Manager
Sequoia Mfg. Co.

Step-firing system supplies classrooms through eight common supply ducts for immediate heating response at economical first and operating costs



EACH PAIR OF step firing furnaces feeds into a common duct to supply specific classroom and office area

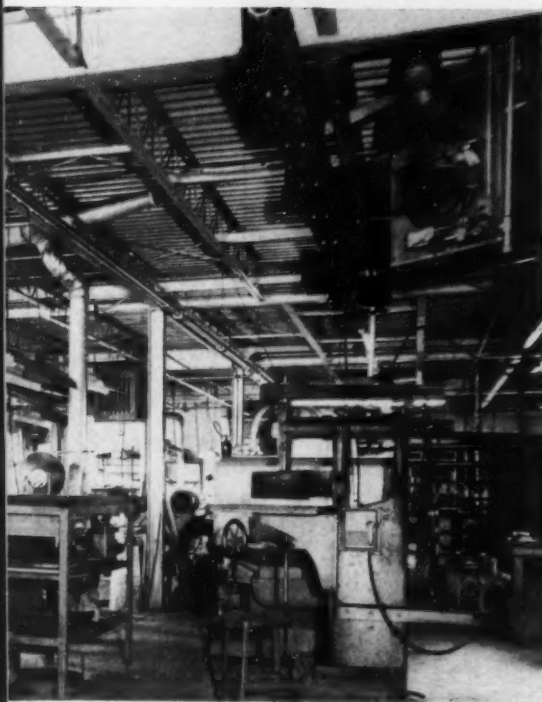
ARCHITECTURAL emphasis on low functional buildings for schools and maximum use of glass for classrooms have created new heating problems which cause designers to turn more and more to zone heating of individual rooms with forced air systems.

A typical example is the new Pius X high school at Paramount, Calif., a suburb of Los Angeles, where a battery of 16 furnaces, each rated at 200,000 Btu bonnet output are installed in a central machinery room. These furnaces step-fire in pairs into eight common supply ducts, two furnaces to each duct. Each duct in turn serves a pair of classrooms or a similar area with equivalent heat loss.

Reasons for the forced air specification are aptly covered in a report by G. Lawrence Ott, Barker & Ott, Los Angeles architectural firm which designed the school.

Mr. Ott states, "Like many western cities we have quite cold nights followed by warm days; therefore it was desirable to have a heating system capable of immediate response. Secondly, individual classroom temperature control was an important economic factor; we were pleased with the original installation cost and also by the economical operating cost. Finally, we have found the forced air system greatly improves classroom ventilation since it actually ventilates as it heats."

Heating installation for Pius X high school was by H. G. Pangborn Corp., Inglewood, Calif.



1 EXHAUST SYSTEM requires 7000 cfm outdoor air and 5000 cfm recirculated air for make-up

By William M. Myler, Jr.

**Chief Engineer
Surface Combustion Corp.**

After-Mix Scheme

• Uncontrolled infiltration, as a result of a special exhaust system to remove abrasive dust, was causing great discomfort to workers in this small foundry. Not only that, the negative pressures were interfering with combustion in the unit heaters. The author explains how an after-mix system was used with direct gas fired duct heaters to provide adequate tempered make-up air for comfort, proper exhaust system performance and good equipment operation.

THE TEMPERING of outdoor make-up air to replace that lost through exhaust systems, now in wide use in industry, is a major problem that requires careful consideration.

Make-up air is needed in any heated structure. In too many cases, natural infiltration is the only method by which this air is supplied. The use of mechanical exhaust systems to remove dust and fumes, however, has created excessive, uncontrolled infiltration problems, with an accompanying increase in worker discomfort from cold drafts. To correct this, many plants have installed

blower systems and direct fired heating units to bring in and temper outdoor air to replace that removed through the exhaust system.

Problems Are Typical

The particular problems faced by the engineers in selecting and installing the proper system for the Fremont Tool and Die Co., Fremont, Ohio, are typical of others often encountered. In the new plant, which replaced the old one that was leveled by fire, it was decided to install individual gas fired unit heaters.

A special exhaust system was also installed to remove the abrasive dust resulting from the grinding and polishing of the precision cutting dies manufactured. Soon after the exhaust system was installed, two things were immediately evident:

1) The negative pressures created by the exhaust system were interfering with the combustion in the unit heaters.

2) Some parts of the working areas were cold and drafty, as a result of air infiltration.

The solution of these problems was to bring in outdoor air in an amount equal to that exhausted and to heat it, using an after-mix system, with gas fired heat exchangers.

Duct Furnaces Chosen

Gas fired duct furnaces, with separate blowers sized for the installation, were selected for several reasons. The conventional gas fired unit heater with propeller fan could not supply adequate air flow for a duct system. Also, the temperature



2 TWO DUCT FURNACES — near clock — preheat recirculated air before it is mixed with outdoor air

Temperers Make-Up Air for Foundry

rise through propeller unit heaters is usually about 50 F, and this would result in too low a temperature of the outlet air. Further, the gas fired unit heater with a belt driven squirrel cage blower, in this particular case, was also inadequate because of limited blower capacity. Duct furnaces are especially designed to operate in heating and ventilating systems where separate air moving equipment is incorporated. They are approved for operation by the American Gas Association for an air temperature rise of 50 to 100 F above an inlet air temperature of 70 F.

Experience has proved that outdoor air, to be heated when below freezing, should not be taken directly into the heat exchanger. If this practice is permitted, the impingement of the low temperature air on the heat exchanger will likely cause condensation of the moisture in the flue gases inside the exchanger at the beginning of each cycle of burner operation. Careful consideration of these factors resulted in the selection

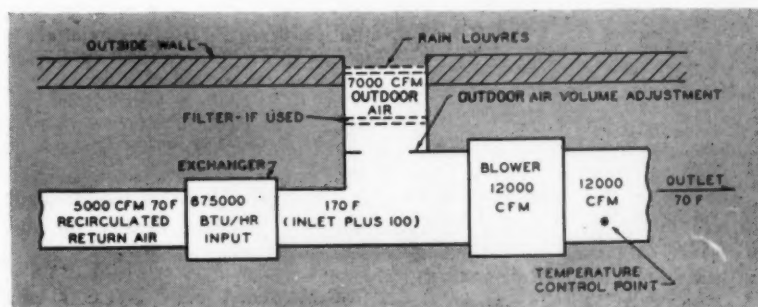
of duct furnaces for this installation.

It was recognized, however, that even if the exchanger were protected, other parts of the installation would be affected by condensate "raining" over them. Therefore, a method of supplying and tempering the outdoor air, with positive assurance against any possibility of condensate formation, was designed. This method, designated as the after-mix system, is illustrated in Fig. 1. Only a portion of the total air is passed through the heat exchanger. Recirculated air is taken from the room, heated to

a maximum practical temperature through the unit, and then mixed with the low temperature outdoor air in the blower and in the outlet ductwork. The outdoor air tempering thus takes place downstream of the heat exchanger.

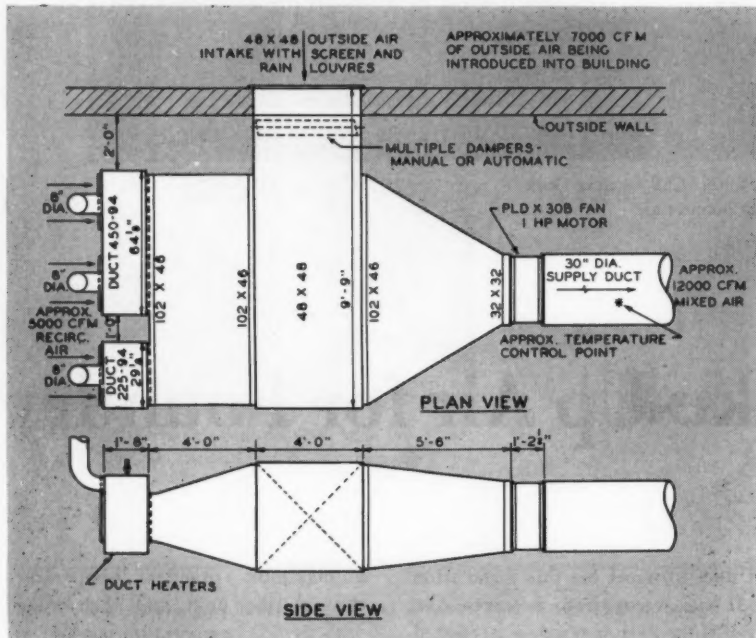
Specifications For System

The following calculations show the basis for specifications of the recirculated air (standard density) volume, duct furnace capacity, and blower capacity in this particular



3 ONLY RECIRCULATED AIR is heated. It is then mixed with outdoor air to temper the latter before delivery via ducts

**“ . . . excessive cool air infiltration is eliminated
by equalizing the pressures inside and outside the plant”**



4 CONTROL of the total heat input is maintained by a thermostat in the mixed air duct after the blower. The outdoor air inlet permits increased volume in summer with a decrease of recirculated air

installation, which necessitated replacement of 7000 cfm of air removed by the exhaust system.

The recirculated air volume was determined by using the following equation:

$$R = R_1(T_1 - T) / [T_2 - (T_1 - T_3)] \quad [1]$$

where R = air to be recirculated, cfm; R_1 = outdoor air (standard density) to be tempered, cfm; T = temperature of outdoor air; T_1 = temperature of mixed air at heater discharge; T_2 = temperature rise through heater; T_3 = temperature of recirculated air.

The values for this installation are as follows:

$$R = 7000 (70 - 0) / [95 - (70 - 70)] = 5150 \text{ cfm}$$

Having determined that approxi-

mately 5000 cfm of recirculated air would be required, the following equation was used to determine the heater input based on an 80 percent efficiency assumption:

$$H = RSDT_h/E \quad [2]$$

where H = heater input, Btu per hr; R = cfm of recirculated air; S = specific heat, Btu per lb per F; D = density of air, lb per cu ft; T_h = temperature rise through heater; E = assumed efficiency.

$$H = (5000 \times 0.018 \times 100 \times 60) / 0.80 = 675,000 \text{ Btu per hr}$$

The total volume of tempered air at 70 F standard density for this system is, then:

Recirculated air	5000 cfm
Outdoor air	7000 cfm
Total	12,000 cfm

The drawing in Fig. 2 shows the after-mix tempering system as designed to provide the 5000 cfm of recirculated air and 7000 cfm of outdoor air. To preheat the pre-mixed return air, two duct furnaces were specified, one with a capacity of 450,000 Btu per hr and one with 225,000 Btu per hr. The control of the total heat input is maintained by an off-and-on control in the mixed air duct after the blower.

The after-mix system appears to possess several advantages:

- 1) Excessive cool air infiltration is eliminated by equalizing the pressures inside and outside the plant.
- 2) Sub-freezing outdoor air does not impinge directly on the heat exchanger.

- 3) Power requirements and blower capacity are kept at a minimum.

- 4) The system permits introduction of outdoor air under widely varying outdoor air temperatures without adding additional heat to the space or upsetting the heating system balance. Good diffusion of the air at the supply outlets permits relatively low air temperatures to be introduced. There is no need for readjusting the temperature controller with changes in outdoor temperature.

- 5) The outdoor air inlet is sized to permit the increase in volume of air in summer with a corresponding decrease of recirculated air. This is controlled by dampers in the ductwork so arranged that the blower motor is not overloaded.

- 6) Because the burners are operated by a single point controller in the tempered air duct, unit control problems are infrequent.



MODEST EXTERIOR of Bower-Kramer Sheet Metal houses a flurry of activity which currently includes fabrication of equipment for heating a 361 house project in addition to regular output

Heavy production schedule met by

Dealer with Planned Approach

Undertaking the heating installations in a 361 house project would be an ambitious undertaking for any contractor. Bower-Kramer meets it with mass production of patterns and fittings, as reported by Alice Holton, Perfection Industries, Inc.

AS HEATING dealers go, Bower-Kramer Sheet Metal, Lorain, O., is a small operator, employing a maximum of seven employees. But you'd never suspect it to inspect the firm's production schedule for the next eight months.

For in that period, Bower-Kramer will complete the heating installations for 361 new homes under construction by the Land & Development Construction Co. at Sheffield Lake, O. — in addition to carrying on its regular production schedule in Lorain and surrounding towns.

With Bower-Kramer it's a matter of putting its work on a time saving, mass production basis. Usually the company is ahead of schedule when it comes time to do an actual installation because patterns are made for each piece used, fittings are made up whenever there is an hour to spare in the shop at the end of the day or between other jobs.

Last year the company turned out as many as seven complete jobs a week, including furnace, gutter and packaged chimney installations. The 1955 schedule calls for ten or more complete installations weekly and owner E. Victor Kramer is confident it can be done with the staff he maintains.

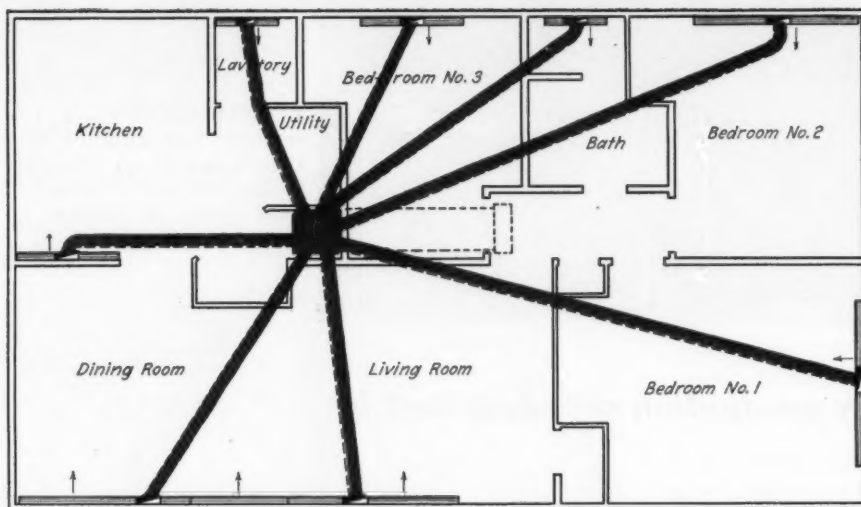
On the Sheffield Lake project, a total of five men on the job and in the shop making up fittings will install three complete perimeter heating installations a day.

Time and material schedules are worked out and prices

are established in the first five or six houses, to coincide with the construction company's plans. Bower-Kramer needs only the equipment used in an ordinary shop;



OWNER VIC KRAMER and an assistant inspect one of Mr. Kramer's inventions — a literature rack fashioned from sheet metal — which has often proved its worth in clinching sales



1 RADIAL LAYOUT of 6 in. round duct supplies baseboard registers at perimeter

overhead is figured on time involved and on material, with the exception of sheet metal and gutter work which is sold at the usual markup. Close cooperation maintained between the two firms in past jobs has paid off in efficiency of operation.

Material is stockpiled in the construction company's warehouse and delivered to each job as it is needed. Storage problems are solved by having the furnaces delivered direct to the construction firm's warehouse near the job — they are never touched by either company until time to install them in the houses. Furnaces are set in place as work progresses. To meet schedules, all necessary fittings and all gutters are made in the shop and hauled out to the project as needed.

Perimeter Systems Used Throughout

All houses in the project are heated by perimeter systems with baseboard registers. Heat runs are laid in the concrete; return air is located in a hall approximately in the center of the house.

Although the company does not sell the prefabricated chimneys used on the current project, they do sell a substantial number to other contractors. Mr. Kramer states, "They aren't difficult to sell as they are cheaper than masonry and in my estimation, highly suitable for gas or oil furnace installations."

Mr. Kramer himself has invented many tools for streamlining his operation. One of his creations, a template which holds a gutter straight while it is being soldered, is estimated to save 25 percent on time alone. The 16 ft template consists of a 2 × 6 in. and 2 × 4 in. board nailed together at a 90 deg angle, to hold the gutter perfectly straight. All except the back and bottom of the gutter can be soldered before it leaves the trough, as the template is placed on two saw horses of bench height and can be tipped from side to side. Another invention which has saved time on project work is a layout table on wheels which can be moved about the shop. A con-

TABLE 1 — Heat loss data by rooms (Btu)

Living-dining	18,600
Bedroom no. 1	8,300
Bedroom no. 2	7,100
Bedroom no. 3	4,800
Kitchen-utility	10,100
Bathroom	2,875
Lavatory	1,850
Total	52,625

tinuous rule on the front edge gives horizontal measurements and a 2 × 3 ft square shows vertical measurements. The table is the same height as the square shear. When a number of pieces must be cut to the same size, the table can be rolled up to the sheet metal bin, loaded with the metal needed, and wheeled back in front of the square shear. One man can feed the full sheets into the shear where the job formerly required two.

Among Mr. Kramer's other specialties are a literature rack, job card rack, window box for flowers, the office safe, telephone extension platform, file cabinet, heating catalog file and the base for a hot plate, all of which were made from sheet metal.

Constant Promotion Pulls Sales

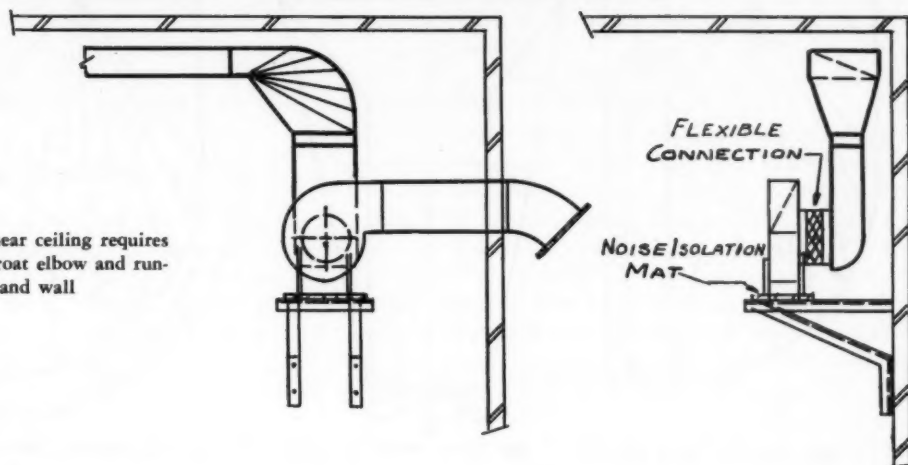
Largely responsible for the constant activity at Bower-Kramer is a constant advertising and promotion campaign which has brought in considerable business. Foremost among the successful media employed to date has been a television advertising campaign which has brought in at least one call for each advertisement run. Costs of the TV advertising were shared by the manufacturers of the equipment.

Participation in the local home show each year has accounted for many leads, although results are hard to determine in that the firm may get a call at any time from a person who visited the show several years ago and is now ready to talk heating. Supplementing these promotion efforts are weekly newspaper advertisements.

"Our most effective medium is satisfied customers," says Mr. Kramer, "and service is our most important product."

HUGH REID'S SHEET METAL PATTERN

1 LOCATION OF FAN near ceiling requires fabrication of an angular throat elbow and running ductwork between fan and wall



Details for Developing a

Compound Elbow With Angular Throat

... for application where resistance to air flow presents a problem

A FAN LOCATED on a wall close to the ceiling is shown in Fig. 1. To make the required duct connection it was necessary to make a transition elbow, bring a duct down the wall behind the fan and insert a flexible connection between the fan and the duct.

To reduce the resistance to air flow, the angular throat elbow was used in preference to a conventional radius throat type elbow.

Problem Analysis

In a problem of this type, all the true length lines can be developed from the front view, providing that the throat and back patterns are developed before the side pattern. When this procedure is followed, the horizontal lines T through Z (Fig. 5) can be used in conjunction with lines A through G (Fig. 3) to aid in the development of the lines A-Z, B-Y, C-X, D-W, E-V, F-U, G-T used in Fig. 6. Note also, that in the development of the sides pattern (Fig. 6) the spacing around the arc P'-R' marked as points 1', 2', 3', 4' and 5' must be transferred from lines N'-R' (Fig. 5). The true length of the throat line J'-K' (Fig. 6) is transferred from the developed lines J'-K' (Fig. 4).

A common error is the use of the equally spaced points around the 90 deg arc P-R (Fig. 3) and the throat length J-K (Fig. 3). It can be readily understood that this procedure would produce lines shorter in length than the

slant lines in the back and throat patterns, with the result that the component parts of the elbow would not fit together when fabricated.

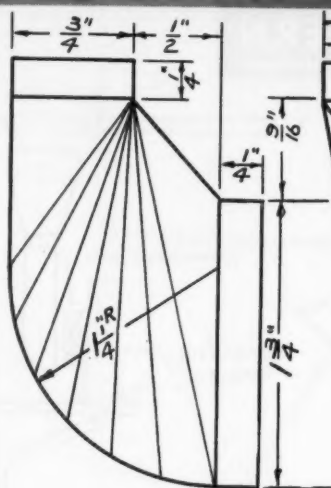
Following is a step-by-step solution of the pattern problem.

Simplified Method Drawing, Fig. 3 —

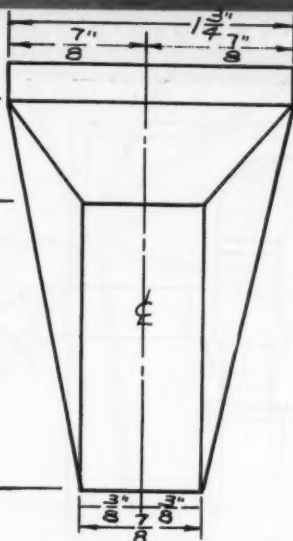
(a) Draw a $1\frac{3}{4}$ in. vertical line, mark the extremity points L and S and from these points draw lines to the left, perpendicular to line L-S; measure $\frac{1}{4}$ in. from both points and draw the line K-R.

(b) From line K-L, measure up $\frac{9}{16}$ in. and establish a measured point. Above this point measure $\frac{1}{4}$ in. and establish a second measured point. Draw horizontal working lines to the left of each of the measured points. From point K measure $\frac{1}{2}$ in. to the left and draw a vertical working line parallel to line K-R. Where the vertical working line crosses the two horizontal working lines, establish points H and J. Draw a line between the points. Through points H and J, draw lines perpendicular to line H-J; on this line measure $\frac{3}{4}$ in. to the left and mark the points M and N. Draw a line from point H to points M, N and J.

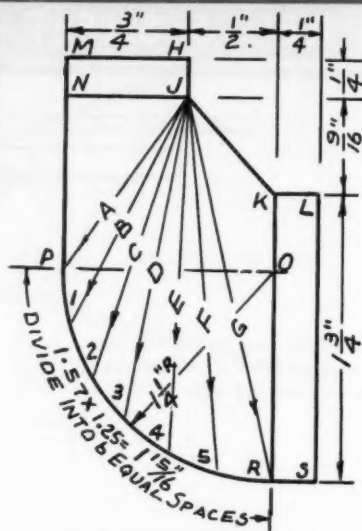
(c) Add the horizontal throat offset measurement of $\frac{1}{2}$ in. to the $\frac{3}{4}$ in. duct width (Fig. 2A) which equals $1\frac{1}{4}$ in. Working from point R (Fig. 3), measure up $1\frac{1}{4}$ in. on line R-K and establish point O. With point O as center and radius $1\frac{1}{4}$ in., draw a 90 deg arc; mark the point



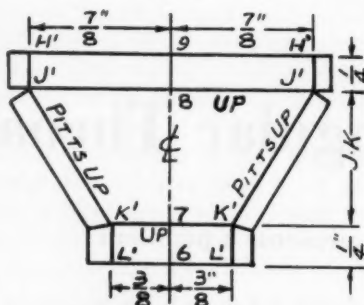
2A FRONT VIEW and ...



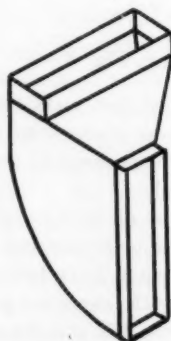
2B END VIEW of elbow



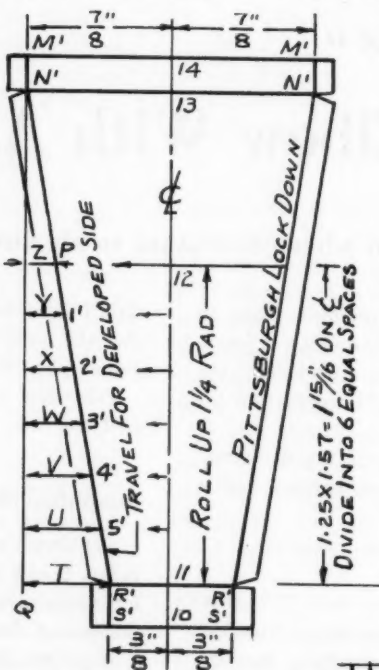
3 SIMPLIFIED METHOD drawing



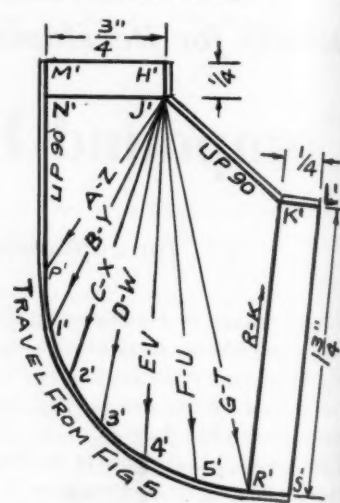
4 THROAT pattern



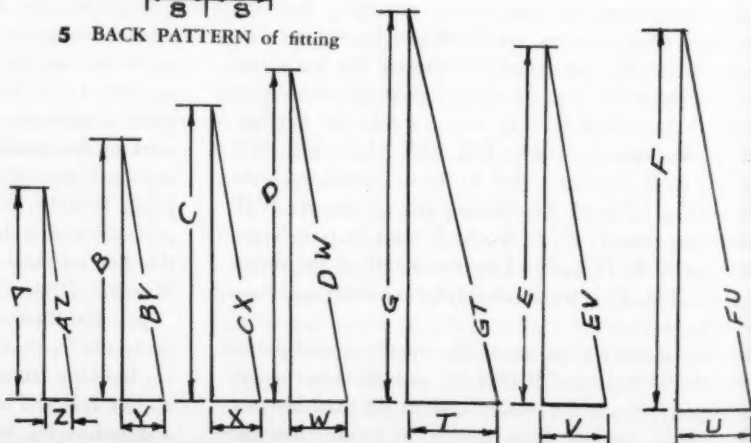
PICTORIAL DRAWING



5 BACK PATTERN of fitting



6 RIGHT AND LEFT sides pattern



TRUE LENGTH LINES

horizontally opposite point O as point P. Draw the line M-P tangent to the arc.

(d) Divide the arc P-R into six equal spaces and mark the division points 1 through 5. From point J draw lines to points P, 1, 2, 3, 4, 5 and R. Label these lines A, B, C, D, E, F and G. Note: the 1 15/16 in. dimension is calculated by multiplying the given 1 1/4 in. radius by the constant 1.57. Thus, 1.57×1.25 equals 1 15/16 in.

To Lay Out the Throat Pattern, Fig. 4 —

(a) Draw the vertical center line CL; on this line establish point 6 and through this point draw a line perpendicular to and extending on both sides of the center line. From point 6, measure $\frac{3}{8}$ in. (see Fig. 2B) to the right and left of the center line and mark the points L' and L'.

(b) Working from Fig. 3, transfer throat lengths H-J ($\frac{1}{4}$ in.), J-K, and K-L ($\frac{1}{4}$ in.) to the vertical center line (Fig. 4) and number the points 7, 8 and 9. Through the points draw lines perpendicular to and extending to the right and left of the center line.

(c) Measure $\frac{3}{8}$ in. to the right and left of point 7 and mark the points K' and K'. Measure $\frac{7}{8}$ in. (see Fig. 2B) to the right and left of points 8 and 9, and mark the two points J' and the two points H'. Draw the outlines H'-J', J'-K', K'-L'.

To Lay Out the Back Pattern, Fig. 5 —

(a) Draw the vertical center line marked CL and on this line establish point 10. Working from Fig. 3, transfer lengths S-R, 1 15/16 in. (length of arc P-R), P-N and N-M to the vertical center line and mark the points 11, 12, 13 and 14. Through the points draw lines perpendicular to and extending to the right and left of the center line.

(b) On lines 10 and 11, measure $\frac{3}{8}$ in. to the right and left and draw the lines R'-S'. Measure $\frac{7}{8}$ in. to the right and left of points 13 and 14 and draw the lines M'-N'. Draw lines connecting points N'-R', M'-M', N'-N', R'-R' and S'-S'.

(c) Draw an extended line from point N' downward and parallel to the center line. Draw a horizontal working line to the left of point R' and where this line crosses the extended vertical line, mark the point Q. Divide the section of the center line marked 11-12 into six equal spaces, and through the equally spaced points draw lines perpendicular to the center line and intersecting lines N'-R' and the extended line N'-Q. Mark the distances between lines N'-Q and line N'-R' with the letters T, U, V, W, X, Y and Z.

(d) Mark the points between P and R' on line N'-R' with the numbers 1', 2', 3', 4', 5'.

The Sides Pattern, Fig. 6 —

(a) Draw the $\frac{3}{4}$ in. horizontal line M'-H'. From points M' and H' draw lines perpendicular to line M'-H'; meas-

ure the given length $\frac{1}{4}$ in. and mark the points N'-J'.

(b) Draw a right angle. Transfer line A from Fig. 3 to the vertical leg and the distance Z between lines N'-R' and N'-Q (Fig. 5) to the horizontal leg. The hypotenuse A-Z is the developed line. With point J' (Fig. 6) as center, and radius A-Z, draw an arc. Measure length N'-P (Fig. 5) and with point N' (Fig. 6) as center, cut the arc A-Z and mark the point P'.

(c) Transfer line B from Fig. 3 to the vertical leg of a right angle and the distance Y (Fig. 5) to the horizontal leg. The hypotenuse line B-Y is the developed line. With point J' (Fig. 6) as center and radius B-Y, draw an arc. Measure length P-1' (Fig. 5) and with point P' (Fig. 6) as center, cut the arc B-Y and mark the point 1'.

(d) Working from Figs. 3 and 5, transfer length C and line length X to the vertical and horizontal legs of a right angle. The hypotenuse C-X is the developed line. With point J' (Fig. 6) as center and radius C-X, draw an arc. With distance 1'-2' on line N'-R' (Fig. 5) as radius and point 1' (Fig. 6) as center, cut the arc C-X and mark the point 2'.

(e) On a right angle, transfer line D from Fig. 3 to the vertical leg of a right angle, and length W from Fig. 5 to the horizontal leg. The hypotenuse D-W is the developed line. With point J' (Fig. 6) as center and radius D-W, draw an arc. With distance 2'-3' on line N'-R' (Fig. 5) as radius, and point 2' (Fig. 6) as center, cut the arc D-W and mark the point 3'.

(f) Draw a right angle. From Fig. 3 transfer line E to the vertical leg and length V from Fig. 5 to the horizontal leg. The hypotenuse line E-V is the developed line. With point J' (Fig. 6) as center and radius E-V, draw an arc. On line N'-R' (Fig. 5) measure length 3'-4' and with point 3' (Fig. 6) as center, cut the arc E-V and mark the point 4'.

(g) Transfer line F from Fig. 3 to the vertical leg of a right angle, and line U from Fig. 5 to the horizontal line. The hypotenuse F-U is the developed line. With point J' (Fig. 6) as center and radius F-U, draw an arc. Set a compass at length 4'-5' on line N'-R', and with point 4' (Fig. 6) as center, cut the arc F-U and mark the point 5'.

(h) On a right angle, transfer line G from Fig. 3 to the vertical leg and line T from Fig. 5 to the horizontal leg. The hypotenuse G-T is the developed line. With point J' (Fig. 6) as center and radius G-T, draw an arc. Set a compass at length 5'-R' on line N'-R' (Fig. 5) and with point 5' (Fig. 6) as center, cut the arc G-T and mark the point R'.

(j) Set a compass at line length R-K (Fig. 3) and with point R' (Fig. 6) as center draw an arc. Measure line J'-K' (Fig. 4) and with point J' (Fig. 6) as center, cut the arc R-K and mark the point K'. Through the developed points draw the pattern outline.

(k) From points K' and R' (Fig. 6) draw lines perpendicular to line R'-K'. Measure $\frac{1}{4}$ in. and mark the points S' and L'. Draw lines K'-L' and S'-R'.

Add allowances for seams and joints and mark the patterns for fabrication.

Planning, Engineering — Prerequisites for

Zoned Cooling in Homes

Careful consideration of cooling load, heat storage, pulldown time and other important factors is a must if the system is to meet the customer's expectations

ZONING in air conditioning systems usually is necessary only in large commercial jobs in order to maintain even temperatures in different conditioned spaces which have varied and changing loads. In the extreme case, it may be necessary in some large buildings for a system to provide heat to some spaces and simultaneously remove heat from others. Many load factors, including sun exposure, amount of glass area, internal heat and others, combine to create the zone pattern.

In a residence, the idea of zoning is used not so much to achieve even temperatures, but rather to achieve economy either in operating cost alone or in both operating and equipment costs. For zoning purposes the house is usually divided into two room groups — the night time sleeping rooms and the day time living rooms. The term *selective* is used in describing this type zoning since the owner *selects* the zone to be cooled. If separate equipment were installed for each zone, it would seem that cooling only the occupied zone would save operating expense as compared with complete house cooling. If a single air conditioning unit were to serve both zones alternately, it would seem that both operating and equipment costs could be saved. The latter arrangement, if it can be properly worked out, has a particular appeal

to budget minded owners who wish to enjoy central air conditioning in their homes but who are not prepared to bear the full expense involved in operating a complete system.

Important Dealer Responsibilities

The man who buys an air conditioning system designed for selective zone cooling will anticipate satisfactory performance from its operation on either zone. Whether or not the system will come up to his expectations depends a great deal upon the care which the dealer uses in designing it and upon the instructions he leaves with the owner. The discussion this month centers upon these two dealer responsibilities.

The design of a system for selective zone cooling requires considerably more care than does the design of a system sized for an entire house. Cooling loads for the latter are frequently made on an overall basis considering the house as a box. This method gives a quick answer for equipment selection. Air for individual rooms is apportioned, for purposes of duct selection, on the basis of floor area. Final adjustment to obtain uniform temperatures in the various rooms is done by means of branch dampers. Short form procedures are quite acceptable as long as they are used within their limitations.

Generally speaking, the problem of selective zone cooling does not lend itself to any quick answer methods since it requires a careful load analysis which takes into consideration the proposed owner operating schedule. A review of some of the fundamentals of the residential cooling load will be helpful toward understanding the problem.

Fig. 1 shows the results of an interesting study made some time ago by engineers of the University of Illinois Engineering Experiment Station. On the lower part of the figure the indoor and outdoor DB and WB temperatures are plotted against time for a particular day.

Cooling Load Curve Plotted

Using the temperature differences shown and making allowances for the effects of direct sun radiation, the engineers calculated in the conventional manner the values necessary to establish the instantaneous cooling load curve. In the same manner, using the design temperature difference of 15 F, proper "U" values and respective areas, the indicated design cooling load was calculated and plotted in its proper place on the figure.

It should be noted that the word "instantaneous" was used to describe the cooling load curve. This means that no account was taken of the heat

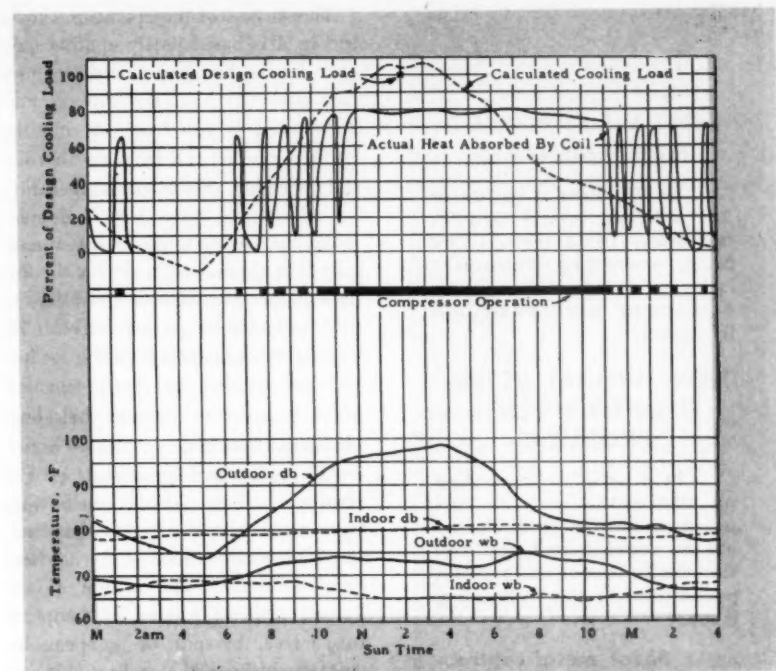
By S. W. Reid

Air Conditioning Engineer
Gilbert Associates, Inc.

storage characteristic of the building structure. It can be appreciated that heat applied to the outside of a single thickness glass window will be almost instantly transferred through the glass to become part of the cooling load. On the other hand, a wall or roof tends to delay the actual sensing of a peak load on its outside by the air conditioning unit to a time when the outside peak has passed. The net effect is a leveling of the external loads as finally felt by the equipment. The cooling load curve in Fig. 1 might be thought of as that part of the heat applied to the outside of the building which eventually becomes part of the cooling load. The time lag characteristic of the building structure is much more important in residential air conditioning, where practically all of the cooling load comes from external sources, than it is in commercial work where internal heat sources contribute the bulk of the load.

Advantage of Heat Storage

The effectiveness of the heat storage characteristic of residential structures was studied in homes that were kept closed and were neither heated nor cooled. It was found that a swing of 20 to 25 deg in outdoor temperature resulted in a corresponding indoor swing of only 5 to 7 deg. It was also found that highest inside tem-



1 ACTUAL AND CALCULATED instantaneous cooling loads on residences and air temperature make allowances for the effect of direct sun radiation

peratures were reached between 8 and 10 p.m. and the lowest between 6 and 8 a.m.

The heat storage nature of the structure is used to advantage in making the most economical selection of cooling equipment. This is especially true in most sections of the country which have moderate to large outside temperature swings during a 24 hr period. If cooling is done at a constant rate equal to the average rate of heat gain over the period, it should be expected that there still might be an inside temperature swing except that the average inside temperature would be lower than without cooling.

It has been found that a gradual indoor temperature swing, even at the maximum of 5 to 7 deg, is quite tolerable in a home, especially since long cooling unit operating time tends to keep the humidity within comfortable limits. During most of the season with less than design outdoor conditions and lower outdoor swings, the indoor swing would be less than 5 to 7 deg.

The operating pattern of a cooling unit sized to take advantage of the

heat reservoir effect of the structure is shown in Fig. 1. The curve showing the heat absorbed by the cooling coil was established from observed data taken from the air conditioning unit. It will be noted that some cooling was taking place even after the compressor had stopped between on periods. This is explained by the fact that the coil itself had not warmed up to air temperature.

The cooling unit selected had a capacity of less (by about 20 percent in this case) than the instantaneous design load. By taking structure heat storage into consideration it is often possible to justify the selection of smaller equipment at considerable savings over that which would be required if the selection were based on the instantaneous load. In order to eliminate as much guesswork as possible in calculating the allowance that should be made for the effect of heat storage, methods for determining the residential cooling load have been developed which incorporate the necessary adjustments. One of these is described in *Manual 11* published by the National Warm Air Heating and Air Conditioning Association.

FIRST WE EXPLAINED FUNDAMENTALS

... in Mr. Reid's series of 20 articles (concluded in the May, 1954 issue). The basic operating characteristics of residential cooling equipment were described in detail.

NOW SPECIAL ATTENTION TO SPECIFIC PROBLEMS

... in a new series based on the author's wide experience in the field. Pointers on service and application techniques have been presented in the following issues:

1) Sheet metal contractor installs year 'round air conditioning system in branch bank (June 1954).

2) How to service hermetic condensing units (July 1954).

3) Keeping cooling coils operating at peak efficiency (August 1954).

4) Refrigerants for residential air conditioning systems and how they perform (September 1954).

5) Methods used to lubricate residential cooling systems (October 1954).

6) Locating troubles and what to do about them (November 1954).

7) How to charge a cooling system (December 1954).

8) Making maintenance contracts pay off in sales and service (January 1955).

9) Setting up an air conditioning department (February 1955).

10) Installation techniques for year 'round systems (March 1955).

11) Modernizing a gravity heating system for year 'round comfort (April, 1955).

The success of the operation shown in Fig. 1 is based partly upon acceptance by the home owner of two prerequisites: 1) that the cooling unit be allowed to run freely during the 24 hr period on call from the thermostat; 2) that the house temperature be allowed to vary a few degrees from the average desired temperature. The thermostat is set for the low limit. This gives the air conditioning unit a chance to get a head start by cooling the walls and furnishings during late evening and early morning hours in order to increase their heat absorbing potential.

The heat leveling effect of the structure and furnishings can be seen by comparing the instantaneous cooling load curve (which is the net heat being added to the outside of the house) with the indoor DB temperature curve. In spite of the peak instantaneous load, the cooling unit was able to maintain a fairly even indoor temperature because the building and furnishings were absorbing practically all heat in excess of that being removed by the unit. The compressor was kept in operation long after the peak load on the outside of the house had passed by the absorbed heat as it gradually seeped through to the inside. Notice the characteristic upward swing of the indoor DB temperature as the cooling unit became incapable of maintaining the low limit setting of the thermostat. It is important to understand at this point that equipment selected to operate as just described has no excess capacity and, therefore, cannot be expected to pull a house down to temperature in a short period of time.

Does Zoning Save Money?

It was established in the preceding paragraphs that residential units which are sized to the best economic advantage must be allowed to operate at all times as required by the thermostat if they are to maintain the average indoor temperature desired. This operation is contrary to the intent of the residential zoning arrangements which are under discussion. It was presupposed that zoning was to be done to save operating

expense in the case where separate equipment would be installed for each zone, and to save both investment and operating expense where a single cooling unit would be arranged to handle two zones, one at a time. In either case it was assumed that the sleeping areas would be cooled only at night and the living-dining-kitchen areas would be cooled only during the day. These plans of operation allow only a short pulldown time for the sleeping areas and therefore require equipment of greater capacity than would be needed were it allowed to operate throughout the 24 hr period as required by the thermostat. The pulldown requirement thus tends to diminish the savings in equipment cost which zoning at first appears to offer.

Looking at the problem from a slightly different angle, let's consider the approach an uninformed dealer or contractor might make to a residential zoning problem. He would have no particular trouble in determining the proper load for the spaces in the home to be cooled during the day since this would be based on conventional factors at design conditions. He would, of course, instruct the owner to allow the unit to operate on the thermostat from early morning on so that it could get the necessary running start before the peak load reached the inside of the house.

Consider the Limitations

For the sleeping quarters in the house which he plans to put on a separate zone to be cooled only at night, the dealer might, without proper consideration, assume a very light load due to the prevailing outside conditions at the time. The fallacy of this reasoning was previously shown by reference to Fig. 1. From 6 p.m. on, the instantaneous cooling load was below the capacity of the cooling unit yet continuous operation was necessary until 11 p.m. just to maintain the average inside temperature. One can well imagine the struggle this cooling unit would have had were it applied at 6 p.m. to a space in which the indoor temperature was

well above the desired average. Even after the 5 hr run to 11 p.m. under these conditions, the space temperature would probably still be above the desired average. The point here is that the dealer must recognize the limitations of residential cooling unit selection and must take into account pulldown time as well as the true load in the night time zone if he is to have a workable zoned system.

Because of the importance of pulldown time in analyzing the practicability of zone operation, the dealer must consider the probable operating schedule of the people who will be living with the system. More than likely they will want to keep the equipment operating on the living room zone until bed time. They will then want to switch it over to the sleeping room zone and will expect to find desired conditions in say a half hour. The dealer must determine as nearly as possible whether or not this can be done. If it cannot, he may suggest a compromise schedule which he thinks will work and which is understood and accepted by the owner. The compromise might include reduction in the number of bedrooms to be cooled. People who do not understand air conditioning may think it can be switched on and off like an electric light. The dealer on any residential cooling job should explain to the owner how the system was designed to operate and what can be expected if it is operated otherwise.

Dealers who have had experience with zoned residential systems report only limited success. In spite of this, however, the writer believes the zoned system has its place if it is properly and carefully planned. From the dealer's point of view it would seem he could expect reasonable success from a two zone system having a common cooling unit where the true load in the secondary or night time zone is considerably less than the day load. Under these circumstances the unit would have the excess capacity needed to cool down the space in the time the owner would allow. If it were necessary to select an air conditioning unit with more than the minimum capacity needed for the day load in order to meet the night load pulldown

requirement, there would be very little, if any, savings in the zoned arrangement.

Pulldown Time Is Key Factor

The dealer would certainly not want to recommend a two zone arrangement using a common cooling unit where careful analysis shows conditions impossible to meet. Neither would he want to sell a two zone system where each zone has its own cooling unit unless there would be some advantage to the owner. The latter arrangement has the same design pitfalls as the former. The importance of pulldown time cannot be overemphasized. The dealer might correctly select units for each zone which would be perfectly satisfactory if they were allowed to operate around the clock under the control of a thermostat. Since the daytime zone would more than likely be cooled in this manner, no difficulty would be anticipated. If, on the other hand, the night time zone were to be cooled only shortly before he retires, the owner would probably find this unit considerably short of capacity.

The writer is not aware of any tested and proven methods for estimating a cooling load in portions of a house that are to be cooled only at night. It would certainly not be safe to assume that it would be any less than the standard daytime load figure such as might be obtained from the method described in *NWAHACA Manual 11*. As pointed out, this load is not a maximum but an average used for the purpose of economical equipment selection. The cooling coil curve on Fig. 1 shows that the average load existed up until 11 p.m. when the cooling unit was finally able to catch up to it and begin to cycle.

The dealer will have to use his judgment as to how much excess cooling capacity the unit should have beyond the load figure for pulldown purposes. This will depend upon a number of factors such as the pulldown time to which the owner will agree and the possible use of direct outside ventilation air in the secondary zone to precool it before the mechanical cooling unit is applied.

There are other requirements for successful zone operation. When a common unit is to be used on several zones, all zone dampers must be conveniently arranged and located if the home owner is to be expected to make much use of them. If they are located in the basement or attic or are not readily accessible, the use of damper motors should be considered for practical reasons. Their use, however, by adding to the cost of the installation, will be contrary to one of the main reasons for considering the zoned arrangement. Needless to say, the dampers must be air tight to make the full unit capacity available to either zone.

Separate Return Systems

Each zone will require its own return system even though a common unit is used. Air returning through an unconditioned zone would pick up heat from that zone. This recommendation might have an exception in a case where the cooling unit has more than adequate capacity for the night zone, such as when the full living quarters are cooled during the day but only one bedroom is cooled at night.

The home owner should be instructed in the proper use of doors to contain the conditioned spaces; doors leading to unconditioned spaces must be kept closed. Even though no conditioned air is being supplied to them, natural thermal circulation will bring heat from these spaces and add it to the load in the space being conditioned. Windows, of course, must not be opened in either zone while it is being cooled.

Selective zone cooling in residences does not offer a universal solution to the need for low cost cooling nor should it be attempted by dealers who are not prepared to make the proper analysis to assure successful operation. There are homes now where it is being used to advantage, and there will be others. There are also homes where it has been tried unsuccessfully, and there will be others. The category into which his residential zoned jobs will fall is largely up to the dealer himself.

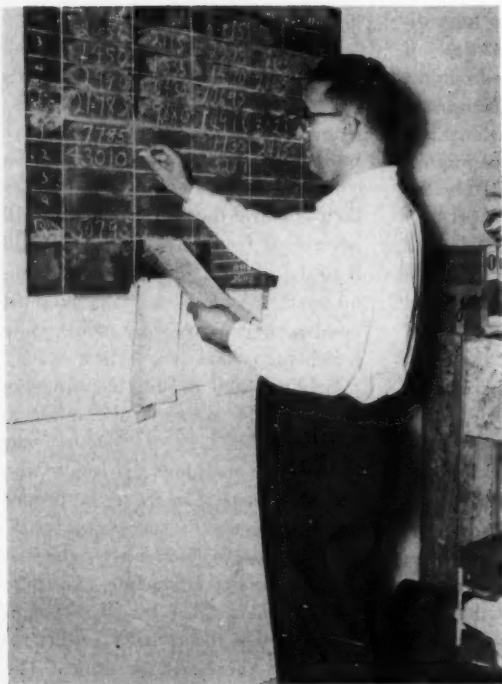


Dealer's Post Card Campaign

His Heating Business

A complete residence directory and subscriptions to building reports furnish valuable mailing lists which supplement salesmen's activities in developing future work

By Ted Knight



KEEPING TRACK of salesmen's activities enables partner Barney Menditch to plan an even flow of future work

AN IMPORTANT PHASE of the sales promotion activity at General Heating Co., Bladensburg, Md., is its post card mailing system which advises homeowners of heating installations made in their neighborhoods.

When a new unit is installed in a residence the company requests the owner's permission to invite his neighbors to look over the new equipment. He is offered a merchandise award for any sales which arise from the inspection.

On receiving the customer's permission a mailing list is compiled from an up-to-date directory of residences and cards are mailed to residents within several blocks of the installation, inviting them to inspect the new equipment in actual operation and to discuss it with the owner. The response, whether from curiosity or need, has been encouraging and many sales have been directly attributed to the system.

Merchandise Awards Promote Leads

Periodic post card mailings to the entire customer list repeat the offer of merchandise awards for leads which are converted into sales. Double folding post cards make it easy for the customer to list the prospect's name and address and return the card postpaid.

"Wherever we have a new customer in one section of town," says partner Barney Menditch, "we can soon expect to have a few others from the same neighborhood; thus, our heating business snowballs year after year."

The company's four sales engineers are enthusiastic



PREFABRICATED DUCTWORK is available in quantity for immediate use in project work

about the efficiency of the post card mailing system because it relieves them of a large part of their function of soliciting new business and allows them to direct more effort to other aspects of the business.

Cards Feature One Stop Service

Another post card campaign is directed toward obtaining heating jobs from building contractors. From information gathered from reliable building reports, the company mails cards daily to contractors engaged in home construction. The cards describe General Heating's operation and feature the company's one stop service which includes heating and air conditioning as well as the necessary electrical and plumbing work, and complete fabrication, fitting and refrigeration service.

A large stock of standard size ductwork and fittings is maintained in stock bins to be withdrawn as needed. Enough fabricated sections for a 300 home project are kept in the bins and are replaced as they are withdrawn. Work is maintained on a steady level by alternating home modernization and project jobs.

One tool which has proved effective in planning future work is a blackboard chart which lists all salesmen and the amount of work each has brought in for future action. The chart is broken down by months in order to maintain a current record of work scheduled. When a salesman's work schedule figure is low he is able to exert a concentrated effort in advance to bring it up and avoid any future slump in business. The company's entire promotional program is available to the salesmen.

Classified File Provides Presentation

Before a salesman contacts a prospect he consults a classified file from which he prepares a special proposal folder consisting of manufacturers' literature on the type

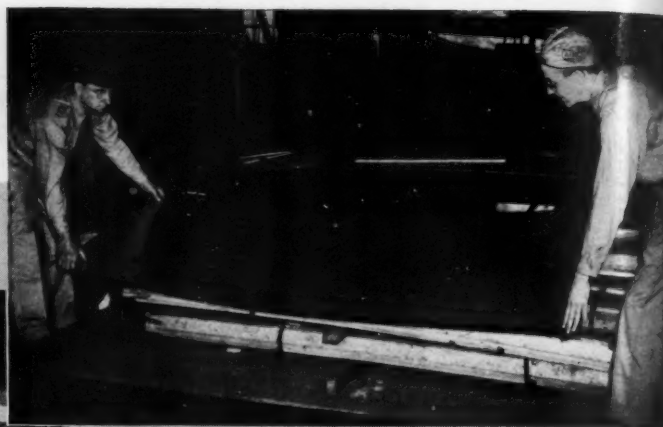


SALES CLINCHER is detailed discussion of heating equipment on display in company showrooms, followed by a tour of the shop

of installation which will meet the customer's needs. The entire sales presentation is built around the specific installation.

Of course, the goal of the salesmen is to get the customer into the shop and showroom where he is shown the heating equipment in attractive settings and in actual operation. He is taken on a tour of the shop where he is shown how all equipment is tailored to fit and is given an inside view of the efficiency of operation.

WHERE CRATES must be laid flat, all nails must be pulled when the top side is opened; sheets are carefully removed one at a time. Workmen should avoid dragging sheets across each other and should under no circumstances leave sheets on the floor



A-FRAME PROVIDES one of the handiest and most efficient methods of storing opened crates of stainless steel sheets. Easily set up, the frame takes little more space than flat-lying crates, gives better protection and makes sheets more accessible

Successful Stainless Steel Work — **Product of Proper Handling**

By E. M. Rains
Armco Steel Corp.

Spoiled stainless steel jobs make expensive scrap. While the metal itself is tough and strong the polished finish must be protected against damage in fabrication and erection

WHEN THE distributor's truck arrives at the shop with a delivery of stainless steel sheets the contractor undertakes an investment which he must protect.

Protective measures of course consist largely of careful handling, fabrication and erection. No contractor intentionally abuses his stainless steel sheets but many could profitably exercise more care in stacking and working the sheets. The few extra seconds involved in the practice of simple precautionary methods can save many hours of work later on. And refinishing costs for stainless steel run high.

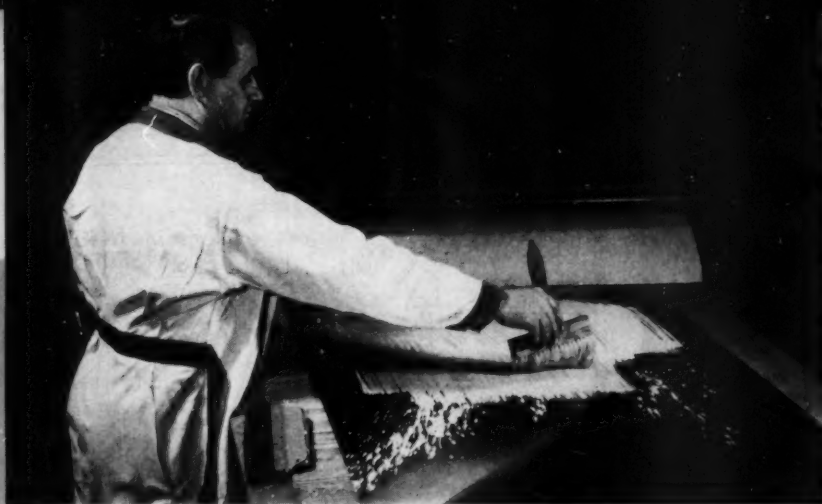
Some sheet metal contractors store their sheets in racks; others pile them on the floor in the most convenient place, which is much less desirable. Usually the stainless steel is in good condition up to this point provided the sheets have been properly handled during de-

livery — and distributors' truckmen are old hands at safe handling methods.

A safe and effective method of delivery for a basement shop or storeroom is a simple chute on which truckmen slide the crated sheets into the storage area where they are carefully lifted onto a conveniently located A-frame stand. For ground level shops of course the chute is not necessary, but the A-frame stand should be located as near as possible to the loading dock.

An Ounce of Prevention . . .

When trouble starts it usually comes from dragging sheets over the floor or across other sheets — an obviously bad practice. There are shops in which safe storage has been sacrificed for convenience to the point where



PROTECTIVE PAPER SETUP prevents sheet from being scratched. Worker applies paste with a large brush and pulls paper over it from roll at end of table. Note the soft brush at worker's side to dust off the sheet before pasting

workers actually walk on the sheets while they are being stored or handled. Both of these practices will result in refinishing work later on and could easily have been replaced by more efficient storage and handling methods.

For moving quantities of crated stainless steel sheets, a movable chain hoist has been found effective, from both time and safety standpoints. When the hoist is properly rigged, the load is lifted and laid down with no damage to crate or sheets.

In lifting the stainless steel sheet to the work table, workmen should wear soft cotton gloves, not only to protect the metal against smudging and fingerprinting, but also to protect workers from painful edge cuts. The table on which the sheet is to be worked should be covered with cardboard to protect the finish.

Keep Iron Particles Away

Another common source of damage which can lead to rusting in service and dissatisfied customers is iron pickup. Particles of iron which may become imbedded in the stainless steel are likely to rust and spoil the entire job. These particles can be picked up in handling before fabrication or, more frequently, in any forming or welding operation in which the stainless steel comes into contact with carbon steel or cast iron equipment. Press brake work is one example; jigs and clamps used in welding are other sources. The sheet should be carefully dusted with a soft brush or equivalent after these operations. Imbedded iron particles can be dissolved by swabbing or dipping the surface in a 20 percent nitric acid solution for 15 to 30 minutes and rinsing with cold water.

All this is not to say that stainless steel is a delicate metal. In reality it is a durable material capable of doing some of the most rigorous jobs in industry. The difference is in the finish — the factor which makes it so important in industrial work — which obviously must be guarded as carefully as a fine finish on any other material.

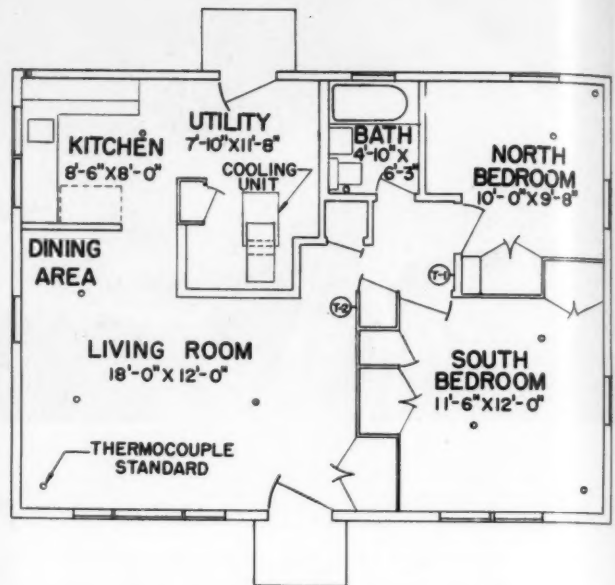


MORE LEGIBLE PATTERNS can be drawn on sheets which have been covered by protective paper. Paper is left on during fabrication



STRIPPABLE PLASTIC is highly effective protection. Sprayed on the metal, plastic dries quickly into a thin transparent film which is easily stripped off either before or after installation

Cooling With a Perimeter Loop System



FLOOR PLAN of Research Residence 3 where perimeter loop duct system was tested

Comparison of room air conditions with registers and with diffusers, investigation of floor condensation and effect of thermostat location are reported from observations made at Research Residence 3 by C. F. Chen, of the University of Illinois research staff during a full cooling season

THE 1954 INVESTIGATION of summer cooling using a perimeter-loop duct system was a continuation of the investigation conducted in Research Residence No. 3 at the University of Illinois during the 1953 cooling season.

One of the objectives of this investigation was to compare the room-air temperature conditions produced when floor registers were used with those produced when floor diffusers were used. The second objective was to determine if condensation would occur on the surface of the floor if floor coverings were used in the Residence. A third objective was to determine the effect of thermostat location on the room-air temperature conditions and on the operating characteristics of the cooling unit.

Research Residence No. 3 is of low cost frame construction and has a concrete slab floor laid on the ground. The exterior of the Residence is finished with cedar shingles, and the interior is finished with gypsum board. The sidewalls are uninsulated, but the attic is insulated with 3 5/8 in. batt-type mineral wool insulation. The attic is vented on the east and west by

louvers in the gable ends. Awnings are used to shade the east and west windows. One in. of edge insulation was placed between the foundation wall and the edge of the floor slab. The Residence has a floor area of 768 sq ft.

The cooling unit, located in the utility room, had a rated capacity of 2 tons at an air flow rate of 800 cfm. The capacity measured in the Residence was approximately 1.5 tons of refrigeration. The unit was water cooled.

Thermostat Locations Varied

Two thermostat locations, marked as T-1 and T-2 in the illustration, were used during these studies. Thermostat location T-1 was used during the 1953 investigation; location T-2 had been used during previous heating investigations in the Residence.

All ducts of the perimeter loop duct system were 6 in. in diameter and were completely surrounded by concrete. Air was delivered from the cooling unit to a subfloor plenum, and thence through the feeder ducts to the perimeter loop. Registers were in the perimeter location, underneath the windows at the outside walls. Air was returned to the cooling unit through a single grille located in the north wall of the living room.

The Residence was unoccupied during this investigation, and the house was kept closed at all times. The thermostat was set to maintain a temperature of 75 F; an air flow rate of 535 cfm, approximately 300 cfm per actual ton of refrigeration capacity, was used. No draperies or blinds were used in the Residence.

For a portion of the summer, a sisal floor covering was placed on the floor of the north bedroom. This

covering was of the type commonly used underneath a rug, and no carpeting was placed above it. During a portion of the investigation $21\frac{1}{4} \times 14$ in. floor diffusers were used. During the remainder of the investigation, 4×14 in. straight vaned floor registers were used. These registers were the same as those used during the 1953 investigation.

Less Differential with Diffusers

All temperature differences observed from the floor level to the breathing level in the room were within 4 F with both types of registers used, but the differentials experienced with the floor diffusers were slightly lower than those experienced with the floor registers.

When the thermostat was at location T-2 the cooling unit started operating later in the day and higher room air temperatures were experienced prior to the first unit operation. Because the operation started later in the day, longer operating cycles were noted. At the time of maximum load, approximately 3 p.m., the room air temperature conditions throughout the house were

identical for both thermostat locations. The thermostat location had no apparent effect upon the total operating time of the cooling unit, and consequently no effect upon operating cost.

No Evidence of Condensation

Even though the floor covering lowered the temperature of the floor surface beneath it, no evidence of condensation was noted on the floor surface. At no time did the floor surface temperature drop below the dew point temperature of the room air.

The datum mean daily temperature above which compressor operation occurred was found to be very nearly the same in Research Residence No. 3 as in Research Residence No. 2. Cooling unit operation occurred when the datum temperature, the average of the maximum outdoor temperature on any day and the minimum temperature of the night before, was above 66 F. This corresponds very closely to the 65 F mean daily datum temperature found for Research Residence No. 2 in previous tests when the Residence was unoccupied.

Ten Acres of Stainless Steel for Skyscraper

SOON THE huge structural steel skeleton of the 42 story Socony-Vacuum building on 42nd St. in New York city will begin to get its gleaming sheath of stainless steel according to a report to the Committee of Stainless Steel Producers, American Iron & Steel Institute. When the last wall panel has been put in place this summer, the world's largest metal clad skyscraper will be protected against weather and corrosion by 10 acres of stainless steel.

The decision by the owners to use pre-formed panels of stainless steel on the city's most newsworthy building was made just 25 years after completion of the nearby Chrysler building.

A Monument in Stainless Steel

The top of the Chrysler building was capped with a stainless steel roof of multiple arch design, surmounted by a stainless steel spire — a pioneering venture in architecture and construction technique in its day, and still a notable feature among the city's monumental buildings. Stainless steel was also used as ornamental metalwork on the first three floors of the building.

Twenty-five years ago Walter P. Chrysler had this to say about the use of stainless steel:

"We are striving to obtain a peak of dignity, of beauty, and of quality in building design, ornamentation and construction. The characteristics of this new alloy make it exceptionally well suited to our needs. It has an attractive color; it shows complete resistance to corrosion; its surface does not tarnish and there is no danger of surface deterioration. Perhaps the most important factor is that maintenance expense is eliminated. It retains its luster indefinitely. I hardly need to add that we are well pleased to have available a metal which so adequately meets the demands upon our designers for permanent architectural beauty."

Mr. Chrysler's expectations have been borne out by periodic tests which show that the Type 302 stainless steel on the building is just as sound today as when the building was erected.

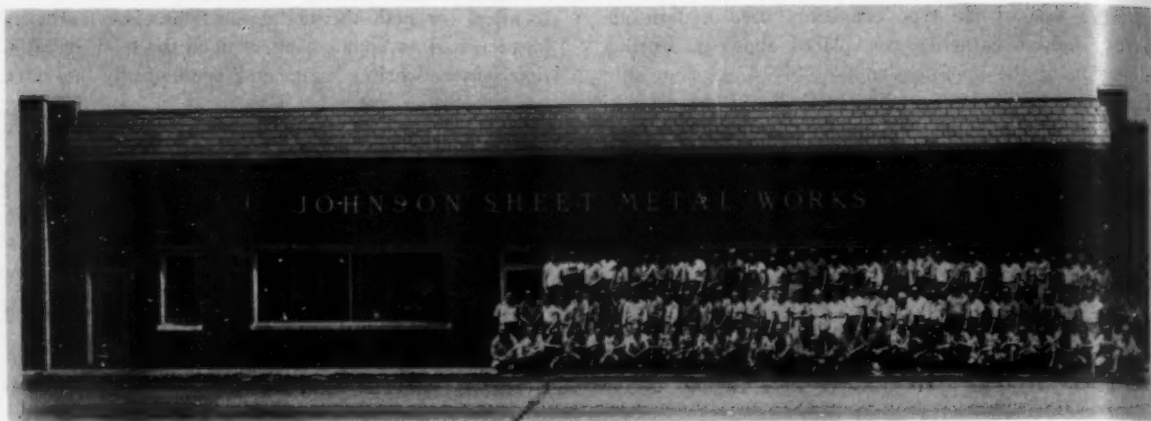
Improved Material Used

While Type 302 stainless steel, from which the Socony-Vacuum building panels, pier covers, span-



TAKING SHAPE near its predecessor, Socony-Vacuum building marks 25th year of major architectural application of stainless steel

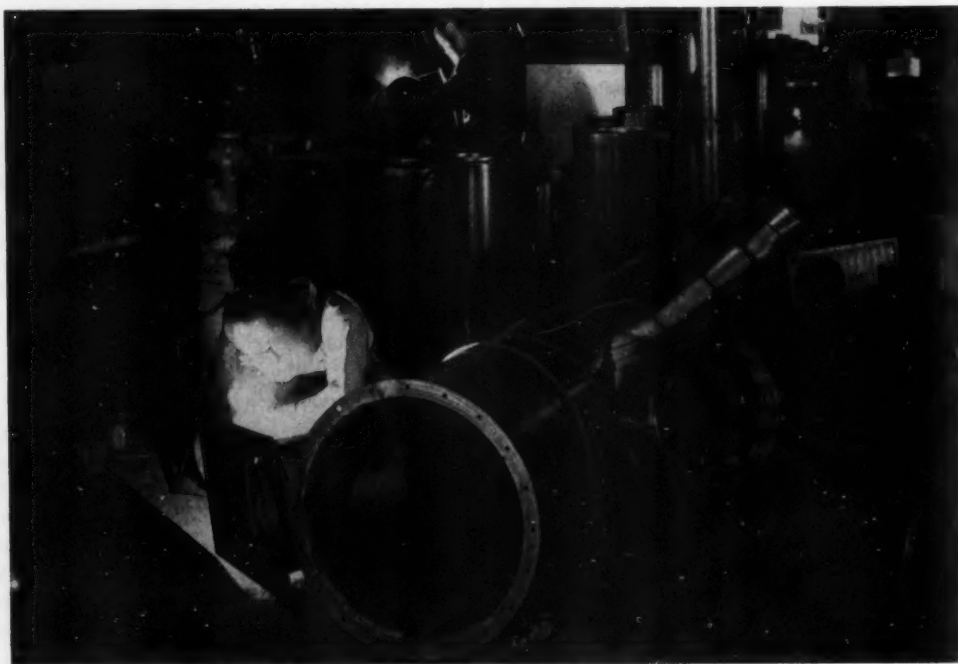
drels, window frames, sash and mullions are being fabricated is the same basic type as that used on the Chrysler building, it has been improved in many respects during the intervening years. Today's Type 302 is a superior alloy by virtue of its improved workability—the result of improved chemistry control and annealing and rolling practices perfected by the major stainless steel producers.



MODERN AND FUNCTIONAL shop houses 100 man staff which is kept busy by firm's promotional activities

Sales Promotion Folders

Pay Off



FABRICATION and maintenance of industrial sheet metal equipment is an important phase of the firm's activity

HEAD
Johns
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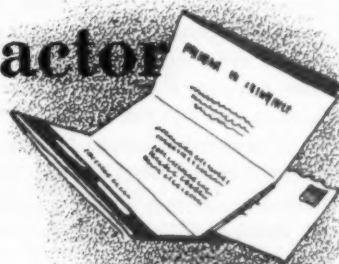
AMER



SHEARING, FORMING and fabrication operations are accomplished efficiently in this well planned shop

For Sheet Metal Contractor

Institutional mailing pieces adapted to five different markets have outdistanced all other promotional media in pulling business for Johnson Sheet Metal Works



By Lawrence H. Bugg

HEADING THE LIST of effective promotion media at Johnson Sheet Metal Works, East Moline, Ill. is a series of two color direct mail folders describing different phases of their business.

The letter size, four page folders cover five of the company's activities:

- 1) Industrial sheet metal and maintenance
- 2) Residential heating and air conditioning
- 3) Refrigeration and air conditioning
- 4) Ventilation and general sheet metal
- 5) Metal building products

Each subject is covered on one page of each folder; the other three pages are alike in all pamphlets, telling the same institutional story. The folders have attracted favorable comments from many customers and have brought in a good deal of new and repeat business. Owners Robert and Charles Johnson credit the mailing pieces with an important role in maintaining a steady

flow of new work. The folders have produced more business at lower cost than any other phase of the company's energetic advertising and promotion schedule, which includes newspaper, radio and television advertising and other media.

Folders Do Many Jobs

Outstanding feature of the folders is their versatility. They are handy enclosures for mailing out bids, quotations, statements, invoices and purchase orders. They are effective as reference materials for the four salesmen to carry on their rounds selling air conditioning, refrigeration and heating. The series can be mailed a piece at a time, serving as periodic reminders of the services offered by the Johnson company. Dignified and informative, they frequently find places in customers' filing cabinets for future reference.



FLEET OF TRUCKS is on call for prompt service — one of the factors in the firm's success story.

Versatile folders illustrate a variety of complicated jobs the company is capable of performing

Another factor which adds to the usefulness of the mailing pieces is the color tie-in with invoices and other literature; a distinctive brown and black color theme identifies Johnson mail.

The folders differ only on the third page. The cover outlines the company's business; the second page illustrates the shop and equipment and emphasizes the quality and low cost of the company's work; the back page describes the services offered. Page three covers individually the five separate divisions together with selling copy and photographs of actual installations.

Specific Services Described

On the third page, in addition to copy describing the firm's proficiency in the particular phase of their work, illustrations are presented of various buildings using their services. Among those illustrated are Bendix Aviation Corp., University of Iowa library, St. Luke's hospital and the John Deere Harvester works.

Page four of the pamphlets is headed by a picture of the front of the Johnson company building and their staff of 100 workers. At the bottom is a lineup of some of their fleet of 15 vehicles. These pictures play a large part in inspiring confidence in the firm's ability to handle a large job.

Folders Illustrate Variety

"Many people think of a sheet metal shop as a furnace shop or a tin shop," remarks Charles Johnson. "Our folders illustrate the variety of jobs we are capable of performing."

The company's owners at first planned a large brochure explaining all phases of the business, but were convinced of the superiority of the folders by the advertising agency which handled the job.

A mailing list of about 2000 within a radius of 100

miles received the first folders in the summer of 1953. The list included general contractors, as well as architects and engineers, industrial plants, commercial establishments and individual homeowners.

Since then there has been no general mailing. Instead, customers and prospects receive different pieces at intervals. For example, an architect who received the *Ventilation and General Sheet Metal* piece in the first mailing might receive the folder on *Residential Heating and Air Conditioning* a couple of months later. In the course of a year he may receive all five of the pamphlets. On the other hand, an individual homeowner might receive only the single pamphlet on *Residential Heating and Air Conditioning*.

A girl in the office keeps a record of pieces mailed to each prospective customer to avoid duplication.

Versatility Brings in Large Orders

Among the company's current jobs is production of stainless steel coverings for ice cream cabinets for a chain of drive-in confectionaries. One of the few shops in the area which do aluminum, stainless steel and magnesium welding, the firm also has produced aluminum air diffusers for the S.S. United States.

Power equipment is used wherever possible in the 17,000 sq ft shop. Overhead cranes and an overhead conveyor system move materials throughout the shop.

Anton Johnson, father of the present owners, started the firm in 1918; Robert joined the company in 1940 and Charles, a mechanical engineer, began in 1946, prior to which he worked with several eastern manufacturers in the heating and sheet metal field.

With the high employment rate in Moline and nearby Rock Island and Davenport, Ia., and with a number of schools and hospitals "on the drawing boards" Johnson Sheet Metal Works looks forward to continued good business.



A QUALITY PRODUCT BY **REVERE** U.S.A.

16 OZ. C. R.

Now

For the first time
you can tell, at a glance,
that you are getting
the exact copper
you specify!

ALL STANDARD SIZES OF

REVERE

SHEET, STRIP AND ROLL COPPER
now come marked with
gauge and temper

Effective with current production each sheet or strip of Revere Copper will be marked as to gauge and temper. All coils of Revere Copper will be marked on the outer copper wrap. Sample marking (actual size) is shown above. These markings also apply to LEADTEX, Revere's Lead-Coated Copper. The ink used for marking is water-soluble so that it is readily removed by a damp cloth or by water alone.

Now, you can be sure, at a glance, what gauge and temper copper you are getting, when you specify Revere. Also included is the Revere Seal (shown above) which identifies the manufacturing source of the copper as American. This seal and the line, "A QUALITY PRODUCT BY REVERE U.S.A." also appears on all shipping cases.

So in order to make sure that you get the gauge and temper of copper you specify, make certain the sheet, strip and roll copper you order, or use, bears the Revere stamp.

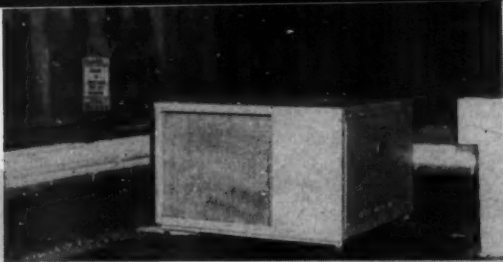
REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

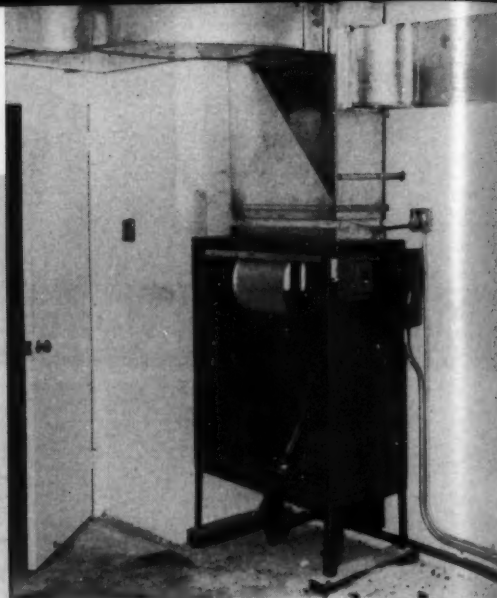
230 Park Avenue, New York 17, N. Y.

*Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.*



CONDENSING UNIT on roof of adjoining wing uses forced air as condensing medium

Dealer Installs Cooling Systems for Separate Apartments



COOLING PACKAGE located in the corner of a room serves split duct system which will be plastered over

... One way to provide summer cooling for people living in apartments heated by central "wet heat" systems

THE PROBLEM of installing central cooling systems in individual apartments has been a limiting factor in making sales in this potential market. Here is how Robert P. Johnsen, Atomic, Inc., Chicago warm air heating and air conditioning dealer installed a 3 ton remote air cooled system in a five room apartment.

The cooling coil-blower unit was installed in one corner of the den, with supply air distributed through a split duct system. Return air is supplied to the unit through a grille located on one side of the lower section of the cooling coil-blower package. A filter attached to the inside of the return plenum grille serves three purposes: 1) to remove dust from the return air; 2) to keep the cooling coil surfaces free of lint which would clog the surfaces and restrict air flow; 3) to minimize noise that may enter the room through the return grille.

Noise Must be Minimized

"The noise problem must be given considerable attention when locating operating equipment in living quarters", Mr. Johnsen said. The cooling coil-blower unit was placed upon a 2 in. machinery cork insulation pad to isolate the cooling package from the floor. Supply ducts were lined with acoustical material to reduce the noise level below the point where it would be noticeable to people carrying on a normal conversation in the living room, which is on the opposite side of the wall from the cooling package.

Air for the bedrooms is supplied by ductwork attached

to the ceilings of two closets. Exposed ductwork in the den is furred in and plastered before the decorating is completed.

Air is returned to the den through a grille located under the unit in the wall between the living room and the den.

The air cooled condensing unit is mounted on the roof of an adjoining wing of the building. The unit contains the compressor, receiver and large finned condenser with a blower which is designed to deliver a large volume of air with a minimum of noise.

Connection of the cooling coil package and condensing unit was performed by the company, which has five refrigeration mechanics on its staff. Mr. Johnsen believes every sheet metal contractor and warm air heating dealer in business today should offer all the services that are essential to giving a customer the kind of comfort he wants, whether it be warm air heating, cooling or year 'round air conditioning.

Insulating Tape Serves Dual Purpose

In the accompanying photograph the suction and liquid lines can be seen leaving the bottom of the cooling coil package and running along the partition wall. The lines appear to be one because after installation the two lines were wrapped with an insulating tape to result in a heat exchange which contributes to improvement of the system's efficiency. The insulating tape also serves to eliminate accumulations of condensation on the cold suction line, a condition which always is undesirable.



"...sure
glad it was
a
Sequoia!"



GOOD FURNACE DESIGN

is important lots of ways. This picture illustrates one: cost of basic design at the time of installation.

Installation time is a straight dollars and cents matter to any dealer—potential profit you didn't make, or the difference between a winning bid and an also-ran.

Little wonder installers tackle tight-spot jobs a lot happier when it's a SEQUOIA *Closeteer* or *Rev-flo*. After all:

With their wide face, extremely shallow depth dimensions, every connection point is right on the face of the furnace within quick, easy reach. Plenum and flue outlets attach without stretching. Naturally installation goes faster!

SEQUOIA's good design is good business for you. This is ONE reason why; there are more. Write us for details of the full SEQUOIA line and address of your near-by sales office.

Reading this, Mr. Dealer, has it occurred to you this also is a strong point you can use to sell your services to builders.

**FORCED AIR
GAS FURNACES
and
AIR
CONDITIONERS**



SEQUOIA MANUFACTURING CO.

1000 BRITTAN AVENUE • SAN CARLOS, CALIFORNIA

No other metal
serves like—
**HUSSEY
COPPER**

ROOF DRAINAGE PRODUCTS

No other metal lasts so long . . . fabricates so easily . . . weathers so beautifully . . . and actually costs so little in the long run as copper. But when it comes to roofing and drainage copper, rely on Hussey Copper, America's best known name in copper roofing products backed by more than 100 years continuous service to industry.



C. G. HUSSEY & COMPANY

(Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH 19, PA.

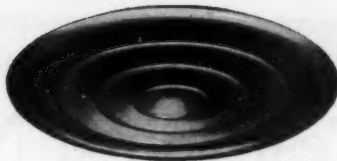
7 Convenient Warehouses to serve you

PITTSBURGH (19), 2850 Second Ave.	CHICAGO (18), 3900 N. Elston Avenue
CLEVELAND (3), 5318 St. Clair Ave.	ST. LOUIS (3), 1632 Delmar Blvd.
NEW YORK (13), 140 Sixth Ave.	PHILADELPHIA (30), 1632 Fairmount Ave.
CINCINNATI (2), 424 Commercial Square	



TYPE PA

Adjustable pattern diffuser



TYPE PS

Stepped-down type, fixed pattern diffuser



TYPE PF

Flush type, fixed pattern diffuser



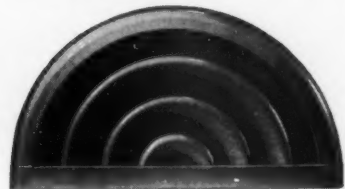
TYPE PR

Flush type, fixed pattern supply and return diffuser



TYPE PLF

Flush type, fixed pattern diffuser with light fixture

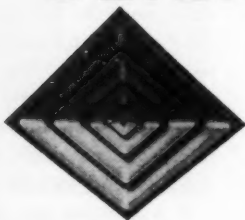


TYPE PH

Flush type, fixed pattern, half round diffuser

Aerofuse

CEILING DIFFUSERS



TYPE D

Flush type, fixed pattern, square diffuser

... a wide selection of types and sizes styled and engineered to meet rigid requirements of appearance and performance ... and designed for easy installation!



TYPE ES

Stepped-down type, fixed pattern diffuser



TYPE H

Flush type, fixed pattern, half round diffuser



TYPE S

Flush type, fixed pattern diffuser



WRITE FOR CATALOG 108

Complete information on
Aerofuse Diffusers
and accessory equipment,
engineering data,
size selection charts, and
directions for installation.



NEW BRITAIN, CONNECTICUT

Cooling Tests Shed New Light

- on duct heat gain
- on operating costs
- on indoor humidity

FOLLOWING IS a preliminary general report covering a survey made during the summer of 1954 of the comfort cooling performance of the year 'round air conditioning systems installed in the 22 residences comprising the NAHB Air Conditioned Village at Austin, Tex. The information herein is as complete as time permitted but does not contain full information on certain studies not yet completed. Additional data will be contained in the final general report which will be released later and published in American Artisan.

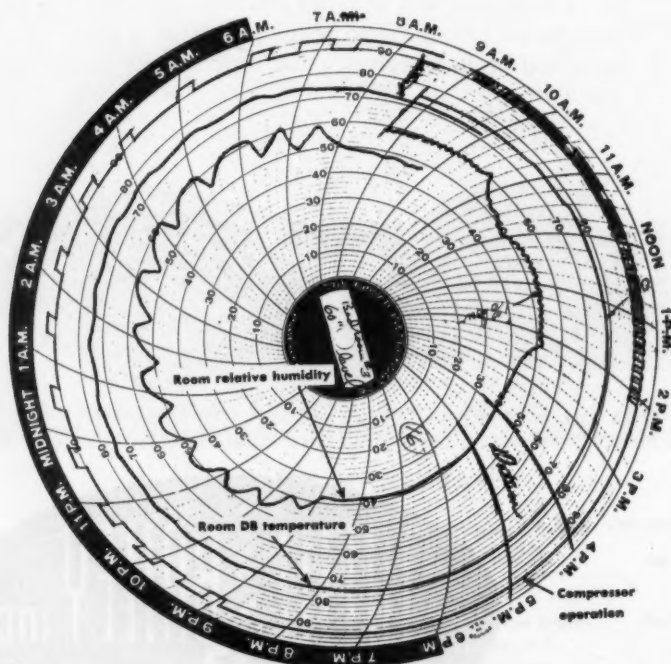
LAST MONTH we discussed findings on condensation inside the furnace, register location, heat gain calculations and other factors in the village tests. In conclusion, we turn to information on relative humidity, heat gain in ductwork and operating costs, as reported by C. W. Nessell to the National Association of Home Builders.

Indoor Relative Humidity

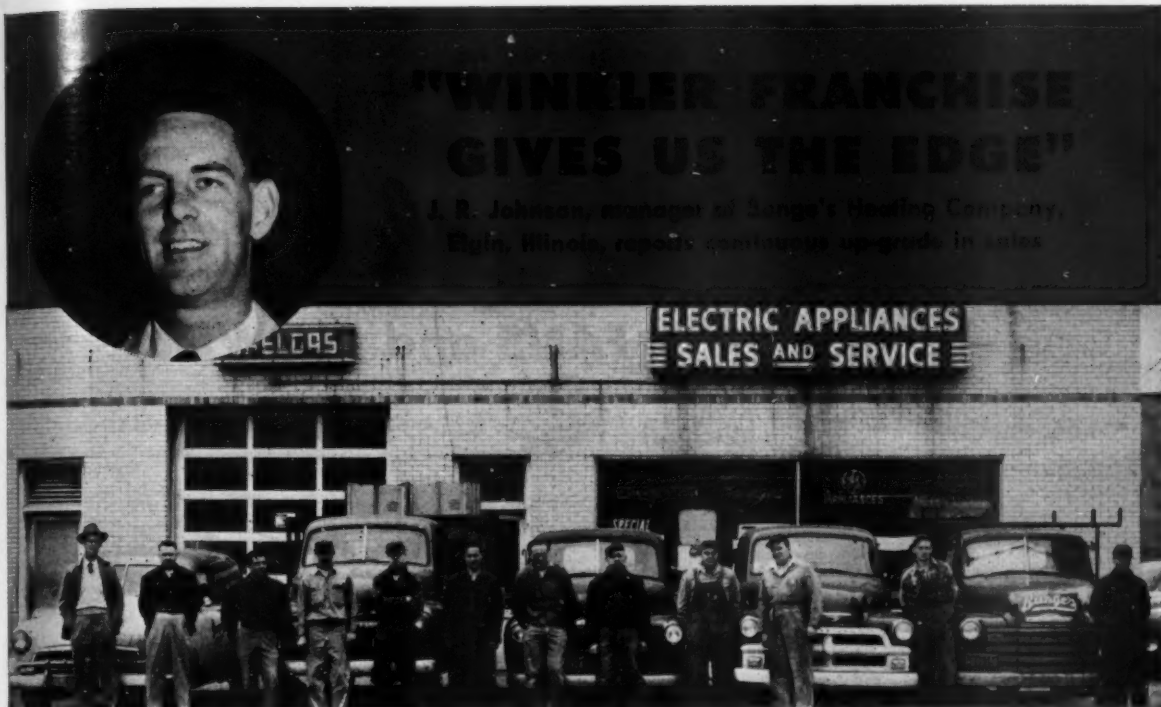
Constant recordings were taken throughout the test period of the indoor relative humidity in the living room. On datum day the weight in pounds of condensate released from the air passing through the evaporator coil was measured, both as to quantity and rate of collection.

It was found that the indoor relative humidity ranged from a low of 40 percent in some houses to a low of 66 percent in other houses. Day-time operation showed the lowest relative humidity due to continuous compressor operation, plus the fact that the outdoor relative humidity was constantly descending as the temperature increased and usually reached its minimum between 3 and 4 pm.

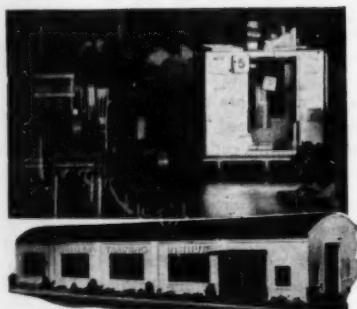
Table 2 shows the average daytime and the high and low night time indoor relative humidities for datum day on ten typical installations selected at random. The schedule also gives the total hours of compressor operation and the pounds of condensate collected on that day. The depth of the evaporator coil in rows is also given. The daytime period is from 8 am to 7 pm and night time is from



1 COMPRESSOR OPERATION, temperature and humidity behavior on datum day at Air Conditioned Village



Bunge's men took a breather between jobs to have this picture taken.



WINKLER TRAINING INSTITUTE FOR SALES AND SERVICE MEN

Winkler backs up its fine heating and cooling equipment with a comprehensive Training Program. In this specially designed and equipped school building, thousands of dealers and their men have received thorough training which enables them to get full benefit from the Winkler Franchise. Trainees are given individualized instruction by factory experts in successful business promotion methods and product demonstration. **A Winkler-trained salesman is a producer!**

An engineering course in sizing, installing, wiring, and servicing Winkler Products is also available.



Bunge's well planned and equipped display room permits proper demonstration of Winkler Products.

Here's the story in Mr. Johnson's own words—

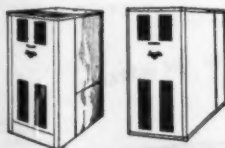
"Our association with the Winkler organization began in January, 1947. Since that time our growth has been continuous, much of which we credit directly to the assistance of our Winkler Franchise.

"This Franchise enables us to better satisfy our customers, not only with the original installation but over a greater length of time than could be attained with other makes. Therefore, the use of Winkler

equipment has greatly increased our number of prospects and sales.

"Winkler's Training Institute has given our sales and service men the *edge over our competitors* through experience and knowledge that can't always be gained in the field."

Why not join up now with the maker of America's most complete line of home comfort equipment? Write today for full information on the Winkler Franchise.



Oil, Coal, Gas-Fired Boilers and Furnaces . . . Gas Conversion Burners
... Oil Burners . . . Stokers . . . Air Conditioners . . . Water Heaters

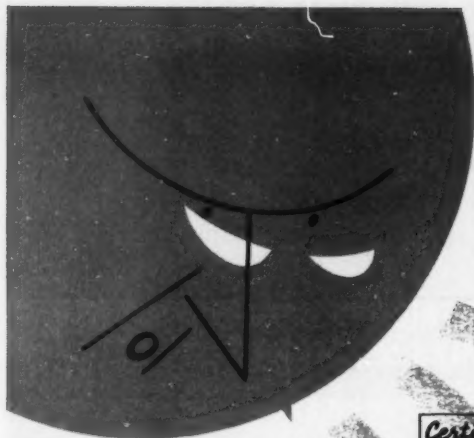
WINKLER

WRITE TODAY FOR DIRECT FACTORY FRANCHISE DETAILS

STEWART-WARNER CORPORATION

U. S. MACHINE DIVISION • Dept. A-55 • LEBANON, IND.

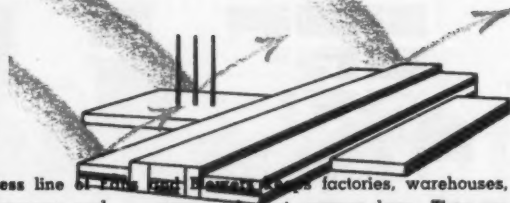
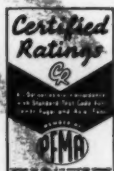




built to beat the summer
heat in industrial plants . . .

Peerless

FANS and BLOWERS



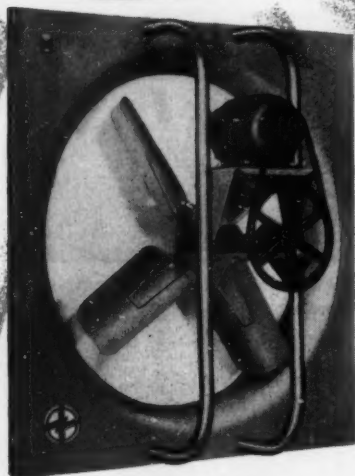
● The Peerless line of fans and blowers keeps factories, warehouses, shops or storerooms cool . . . even on hottest summer days. They are available now for immediate delivery . . . fans that will move from 4,000 to 21,000 C.F.M. . . powered by $\frac{1}{4}$ to $1\frac{1}{2}$ horsepower motors.

To be specific, Peerless PVB Exhaust Fans are ideal for use in factories and foundries and may be installed in duct installations. They are built for continuous duty . . . move dusty, dirt-laden, humid air out and cool air in.

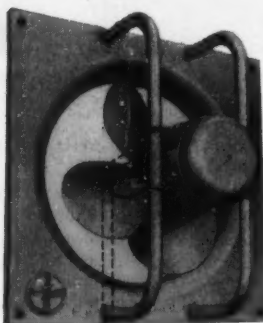
The PVB series is rugged in construction . . . motors are ball bearing, totally enclosed. Fan shaft is supported by rigid enclosed ball bearing pillow blocks. These exceptional Peerless design features cut maintenance costs and reduce breakdowns.

Peerless PVB Industrial Exhaust Fans are available for delivery now in all sizes. Like all Peerless products, they are fully guaranteed.

There is a Peerless Fan or Blower fitted for your needs. For full information call, write or wire the Peerless Electric Company today.



TYPE PVB INDUSTRIAL EXHAUST FAN
Belt drive unit. Fan diameters 24" to 48".

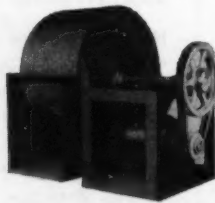


TYPE PVS INDUSTRIAL EXHAUST FAN

Fan diameters 16" to 30". Controllers for 1, 2 and 3-speed operation.



DIRECT DRIVE UTILITY BLOWERS
For boiler rooms, restaurants, washrooms, etc. Arc-welded housings constructed of 16-gauge steel. Available in all types of current characteristics to suit all requirements.



BELT DRIVE UTILITY BLOWERS
Completely assembled with adjustable motor pulley for varying speeds. Housings can be tilted when exhaust angles are required. V-belt drives are selected with conservative ratings for long service.



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For small exhaust systems where air is laden with dust or grit, and for supplying high pressure air for conveying, cooling, etc. Self-cleaning blades. Heavy-gauge, arc-welded steel housings for rigidity and long life.

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FAN AND BLOWER DIVISION

THE PEERLESS ELECTRIC COMPANY

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TABLE 2—PERFORMANCE WITH respect to humidity

Case No.	Hours Compressor Operation	Temperature Drop Through Coil (Deg F)	Pounds Condensate Removed	Coil Depth (Rows)	Average Daytime R.H. (percent)	Night (percent) High	Humidity Low
A	21	23	83.8	4	am—50 pm—40	52	40
B	20	17.5	51	4	44	62	45
C	24	18.5	78.8	4	44	44	40
D	17.4	15.7	37	2	50	54	50
E	14	12.5	37.2	3	55	60	58
F	21.7	16.5	69.4	3	46	52	46
G	19.5	21	55.8	4	40	46	38
H	20	12	73		40	48	40
I	17.7	22.5	77		am—55 pm—48	60	46
J	15.7	23	63	3	45	64	45

TABLE 3—TEMPERATURE RISE through ducts — in deg F

Metal Ducts in Attic — Insulated			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	54.5	56.2	1.7
B	57	58.8	1.8
C	55	62.6	7.6
D	57	59.8	2.8
E	63	65.1	2.1
F	63	72.2	9.2
G	54	61.8	7.8
H	59	61.5	2.5
I	64	60.0	4.0
Average			4.4

Metal Ducts in Dropped Ceiling — Insulated			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	60	61.3	1.3
B	62	64	2
*C	49	53.2	4.2
D	59	60.7	1.7
Average			2.3

*In addition to the metal ducts installed in the dropped ceiling, this house had an uninsulated round duct in the attic 24 ft long with a temperature rise of 26 deg.

Metal Ducts in Dropped Ceiling — Not Insulated			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	59	63	4
B	54	56.5	2.5
C	59	61	2
Average			2.8

Furred Ceiling Duct — Insulation Board Only			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	61	61.7	0.7
B	57	57.8	0.8
Average			0.75

Floor Slab Embedded Ducts			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	67	71	4
B	52	60	8
Average			6

Crawl Space Ducts — Metals, Insulated			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	60.5	65.3	4.8

Crawl Space Plenum — No Ducts			
Job No.	Supply Air Temperature At Coil	Average Temperature At Supply Register	Average Heat Gain
A	66.5	70.7	4.2

7 pm to 8 am the following morning. Humidity readings are those taken in the living room.

Fig. 1 illustrates the effect on indoor relative humidities and temperatures of thermostat differential, long continuous operation of the compressor, and the frequent cycling of the compressor with a horizontal coil through which air flows upwards. This reading was taken on a day when the outdoor temperature reached 98 deg at 2 pm and a low point relative humidity of 17 percent at 3 pm. The outer circle shows the operations of the compressor in response to the thermostat, with the *on* operations occurring when the line is farthest away from the center. The center circle shows the air temperature in the living room, and the irregular inner circle represents the relative humidity.

The compressor operations curve shows very frequent and very short operations from 9 am to approximately 2 pm. The thermostat in use from 8:45 to 10:30 am had a very narrow differential and responded to extremely slight changes in room air temperature. The thermostat was under adjustment between 10:30 am and noon, and even though the chart shows frequent operations actually the compressor operated almost constantly during this period. From noon until 2:15 pm the thermostat went back into normal operation with a slightly increased differential and at 2:15 pm was replaced by one with a wider differential.

It will be noted from the chart that the frequent operations between 8:45 and 10:30 am gave almost straight line temperature control and a steady relative humidity between 58 and 60 percent. In other words, during this period there was no drop in humidity as might be expected. When the compressor operated almost continuously between 10:30 am and noon the humidity dropped to about 50 percent; room air temperature elevated slightly as heat gain increased.

From noon to 2:15 pm the humidity climbed to 54 percent and held steady between 52 and 54 percent without further reduction while

(Continued on page 100)

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IN THE

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING
SHEET METAL CONTRACTING
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2

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- ✓ Ability to handle all planning, engineering, and installing within their own organizations
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AMERICAN ARTISAN has taken the leading role in advancing residential summer cooling and year-round air conditioning, just as it did with residential automatic heating and winter air conditioning. Your advertising in this DOMINANT book is unquestionably where it will produce maximum results from those having maximum potential.

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AIR CONDITIONING HEADQUARTERS



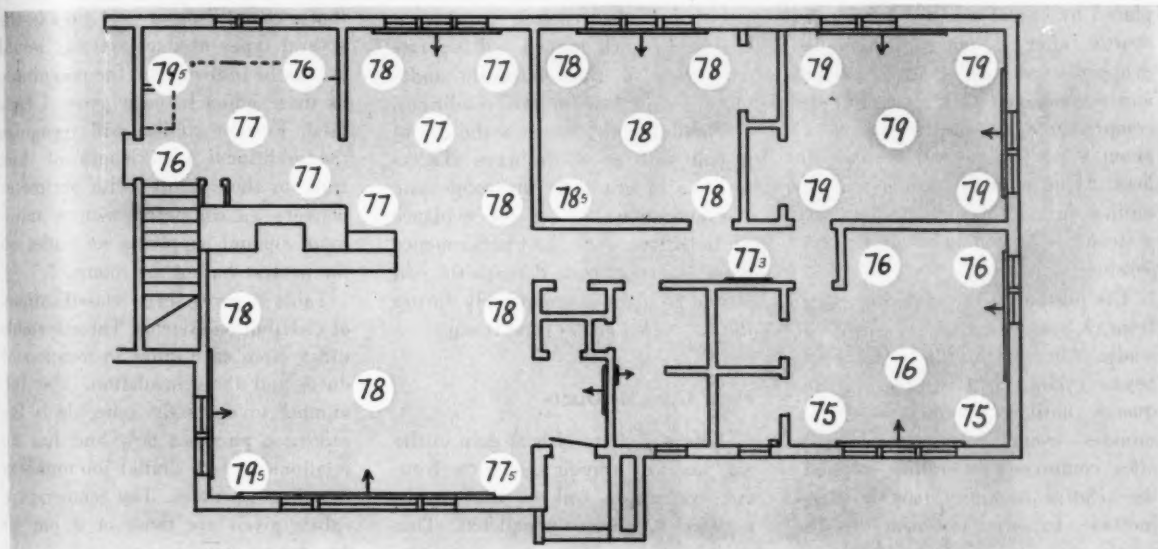
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Mr. Heating Dealer . . .

Here's proof that no cold draft can exist in a

Thermo-Base warm air baseboard installation

BASEBOARD HEATING COOLING



The plan above, shows the wonderful results obtained on a typical THERMO-BASE installation. The temperatures are shown two feet in from the outside corner of each room and 30 inches from the floor. You will note that there is an average of less than 2° temperature difference in any room in the house and an average of

less than 2° difference from one end of the house to the other. Only one return is used in the central hall. Also, note that the average return air temperature was 77.3°, or only .7 of a degree below the average room temperature. This is proof that no cold draft can exist in a THERMO-BASE installation.

Thermo-Base

. . . AVAILABLE IN 8, 5 and 3 ft. LENGTHS!

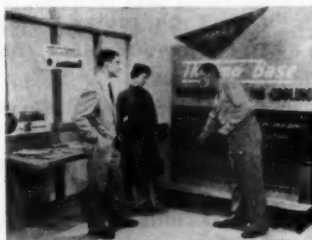
There is a complete range of units for easier, quicker installation. When desired, they can be combined for continuous coverage. Thermo-Base units are finished in a prime coat and may be painted to match the decoration after they are installed.

Super Thermo-Base

is specifically designed to produce the greater volume of delivery required in larger installation. Available in 8 foot lengths only.

Thermo "30" Diffuser

America's lowest priced baseboard diffuser is available for highly competitive jobs. Available in 30 inch lengths only.



Demonstration Scene From Film

NEW Thermo-Base Sound - Color film offers new approach to baseboard selling!

Wholesalers are invited to contact Gerwin Industries, Inc., Michigan City, Indiana for available showing dates.



NEW FREE CATALOG makes any dealer a heating and cooling expert!

Send for your copy today . . . just drop us a line on your letterhead!

GERWIN INDUSTRIES, INC., Michigan City, Indiana

Preliminary Report on Air Conditioned Village

(Continued from page 97)

the thermostat (with a wider differential) still cycled the compressor with longer but still relatively short, frequent on periods.

After the thermostat had been replaced by one of a wider differential shortly after 2 pm the humidity dropped steadily to about 40 percent and remained at that level until the compressor again started to cycle at about 9 pm due to the decrease in load. Along with the decrease in humidity during this period there was a steady reduction in room air temperature.

The portion of the humidity curve from 9 pm to 6 am is worthy of study. After 9 pm the compressor began cycling with decreasing frequency until it operated about 15 minutes every hour. Immediately after compressor operation stopped, the relative humidity took a sharp increase. In some instances this increase amounted to 8 to 10 percent in about 20 minutes. The next compressor operation brought it back down again but the operation was too short to take it back down to its former level. In this manner there was a gradual step-up of relative humidity throughout the night.

The sharp humidity rises on the compressor off cycles at night suggests the re-evaporation of the condensate on the cooling coil into the moving air stream with consequent redelivery into the house. This same performance characteristic has been noted on other jobs in varying degrees. It appears to be more pronounced on those cooling units with the air blowing upwards through a horizontal coil or a coil mounted on a 45 deg angle.

This chart suggests several things. One is that a compromise must be made between a close differential thermostat that will give close room air temperature control and poor dehumidification, and one with a relatively wide differential and improved relative humidity but somewhat wider control of room air temperature. It will be seen on the chart

that air temperatures were not as even from 9 pm to 7 am as they were during the two morning periods between 9 am and noon.

This chart also suggests the capacity of the cooling equipment should be such that it will operate for extended time intervals under close to outdoor design conditions.

Finally, it also suggests the use of a coil with good drainage characteristics to minimize the condensate re-evaporation. So far the evidence at the village shows best performance from a vertical coil. Perhaps the coil should be bypassed completely during the off cycles of the compressor.

Heat Gain in Ducts

A partial study of heat gain of the air passing through the ducts from the evaporator coil to the supply register has been completed. This study was based on an average discharge temperature from all the sup-

ply registers in the house, and no attempt was made to evaluate the temperature gain per ft of duct. Since all the houses had approximately the same sq ft of floor area, it was felt that a comparison of heat gain in the several types of duct systems would at least be indicative of the magnitude of those gains in each general type used. Further studies will recognize the additional total length of duct runs for those houses with perimeter delivery as compared with a minimum amount supplying an outlet on the nearest wall of the rooms.

Table 3 gives seven classifications of distribution systems. These systems differ from each other in location of ducts and their insulation. The job number given in the schedule is for reference purposes only and has no relationship with similar job numbers in other schedules. The temperature values given are those at 4 pm on the datum day.

From Table 3 it appears the greatest heat gain occurred from the ducts installed in the attic, with the exception of those installed in the slab or crawl space. Unfortunately, the resultant loss in cooling capacity is irretrievably lost with no possibility of regain.

The experience with crawl space ducts at the village does not warrant any conclusions at this time.

It might be well to point out that the classification showing ductwork consisting of an insulation board furred ceiling space does not meet the fire code and *NBFU Pamphlet No. 90* requirements when used for heating purposes.

The wide variation in heat gain between jobs in each classification is undoubtedly due largely to the careful installation of the duct system and the application of properly applied and suitable insulation.

Job C (Table 3) under the heading *Metal Ducts in Dropped Ceiling — Insulated* had a single completely un-insulated duct 24 ft long installed in the attic. This duct had a temperature gain of 26 deg at 4 pm on the datum

Features of Equipment Installed

Compressor Location

- 15 in the utility room
- 5 outside the building (garage or outdoors)
- 2 in the attic

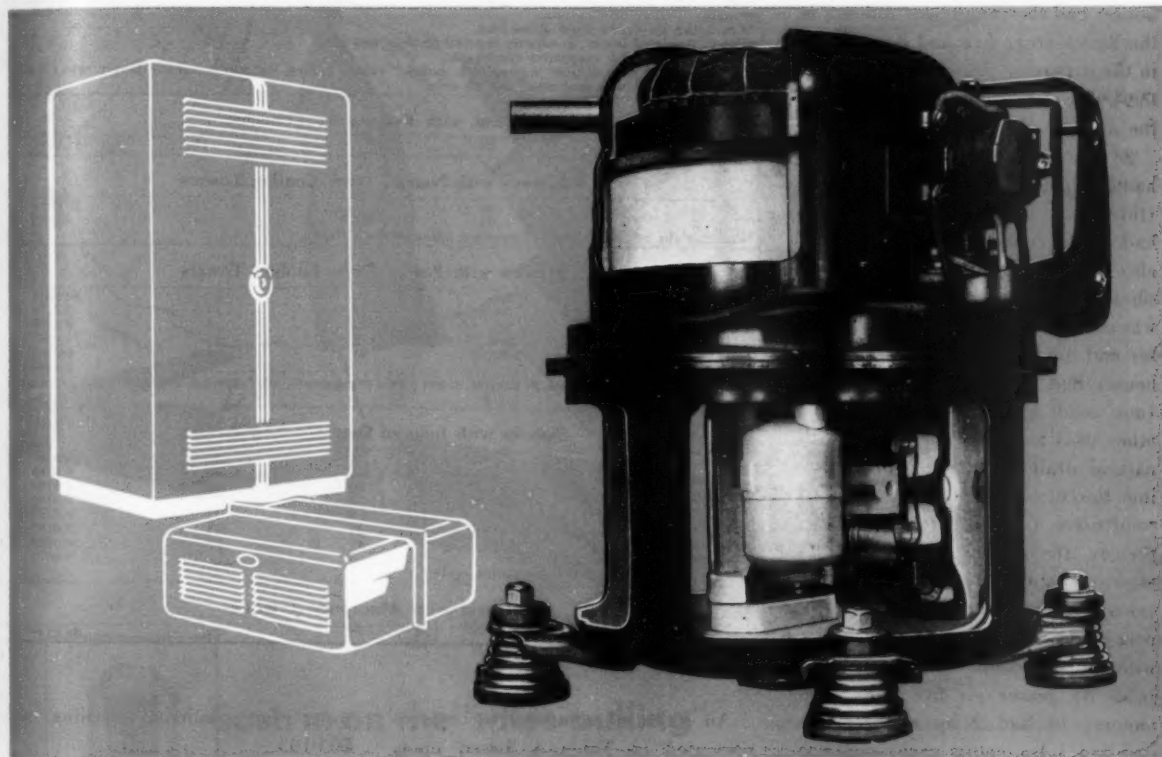
Cooling Media

- 7 air cooled condensers
- 1 evaporative condenser
- 2 natural draft cooling towers
- 5 forced draft cooling towers
- 7 induced draft cooling towers

Power Sources

- 14 2 hp motor units
- 5 3 hp motor units
- 2 twin 1 hp units
- 1 absorption system

WHISPER-QUIET **POWER** for package Air Conditioning



COPELAWELD **HERMETIC**

It takes real engineering (and knowledge of your customers' needs) to produce a welded motor-compressor that combines positive performance, vibration-free smoothness, and maximum operating economy.

Copeland gives you these design advantages and more . . . plus precision manufacture using finest components. Heavy-duty, high-power-factor motor delivers power aplenty with minimum current consumption. Freon-12 and Freon-22 models available. Use of Freon-12 can give you as much as 75°F. lower

temperatures in windings, crankcase, oil and discharge side. Unusually high capacities make Copeland motor-compressors adaptable to virtually every type of duty.

Power all your air conditioning and refrigeration equipment with Copeland motor-compressors. It's the quality equipment that enhances your reputation by its long-run, trouble-free service.

Get full details . . . write today for complete information on the profit-making Copeland line.



REFRIGERATION UNITS (OPEN TYPE AND COPELAMETIC) WATER COOLERS

COPELAND REFRIGERATION CORPORATION • SIDNEY, OHIO

Copeland
DEPENDABLE *of the* REFRIGERATION

day. This situation certainly is one which should be avoided.

Operating Costs

The 22 jobs in the village may be grouped as follows:

1) *By compressor location* — 15 houses had the compressor indoors in the living area; five had it outdoors, in the garage or elsewhere apart from the living area; two houses had it in the attic.

2) *By condenser cooling* — six houses had air cooled condensers (three had 3 hp compressors, three had 2 hp compressors), one house also having an auxiliary water cooled condenser using city water; one house was cooled by an evaporative condenser and used a 2 hp compressor; two houses had water cooled condensers (one used a 3 hp compressor, the other used a 2 hp compressor) with natural draft, vertical redwood cooling towers; five had water cooled condensers (one used a 3 hp compressor, the others had 2 hp compressors) with forced draft cooling towers; seven had water cooled condensers (all compressors were 2 hp) with induced draft cooling towers.

3) *By power* — five had 3 hp motors; 14 had 2 hp motors; two had two 1 hp motors each; one was an absorption system using natural gas.

The preliminary reports on individual houses indicated that operating costs varied from \$0.80 to \$1.46 per 24 hour day during the months of the survey, depending upon the house and the weather. The average was about \$1.06. All costs are based on electricity at \$0.0162 per kwh, water at \$0.25 per 1000 gal and gas at \$0.60 per 1000 cu ft.

To compare houses more exactly, costs were also adjusted for house size and weather severity. These gave the cost per 24 hours per sq ft of floor space per deg which the outside temperature exceeded the 80 F indoor design temperature. This index varied from \$.0000835 to \$.000177, with a village average of \$.000125.

Thus, one cent per day cooled roughly 80 sq ft of floor space under Austin design conditions.

TABLE 4—OPERATING COST per hour (3 to 4 p.m.) in Austin, Tex.

House	Compressor hp	Temperatures at Datum Hour (Deg F)			Cost per hour per 10,000 Btuh
		Outside	Indoors Usually at thermostat	Difference	
Systems with Air Cooled Condensers					
A	3	94.5	75.5	19	\$0.0226
B*	2	109	87	22	0.0248
C	3	95	76	19	0.0160
D†	3	97	79	19	0.0241
E‡	2	98	76	22	0.0161
F||	2	87	79	8	0.0360
Average 0.0207					
*Condenser air drawn from above roof.					
†Poorly insulated house; condenser exposed to afternoon sun.					
‡Condenser wet with evaporator condensate.					
||Condenser air drawn from uninsulated garage; excess cycling by thermostat; auxiliary water cooled condenser. House was unoccupied during tests.					
System with Evaporative Condenser					
G	2	99	82	17	\$0.0191
Systems with Natural Draft Cooling Towers					
H*	2	104	81	23	\$0.0153
I	3	93	79	14	0.0325
*Probably the best insulated and oriented house in the village.					
Systems with Forced Draft Cooling Towers					
J	3	95	76	19	\$0.0238
K	2	96.5	77	19.5	0.0170
L*	2	102	76	26	0.0109
M	2	100	77	23	0.0167
N	2	97	80.4	16.6	0.0202
Average 0.0177					
*Evaporator condensate used in cooling tower; two compressors, one running day and night continuously.					
Systems with Induced Draft Cooling Towers					
O	2	100	78	22	\$0.0231
P	2	103	81	22	0.0168
Q	2	96	80	16	0.0194
R*	2	102	72.5	27.5	0.0140
S	2	96	75	21	0.0127
T	2	103.5	80	23.5	0.0157
U	2	100	85	15	0.0208
Average 0.0175					
*Compressor ran day and night continuously.					
System with Absorption Cooling					
V		95	77	19	\$0.0149

An index of comparative costs is presented in Table 4, based upon datum hour power, water and gas consumption together with revised heat gain estimates based upon National Warm Air Heating and Air Conditioning Association *Manual 11* (1954), and actual indoor and outdoor temperatures.

The computed heat gains used are not entirely satisfactory because building practice in the South and Southwest varies considerably from that covered in the 1954 issue of the *Manual*.

The operating costs given are in cents per hour per 10,000 Btuh of design heat gain, corrected for temperature difference between outdoors and indoors. Thus, they indicate the cost per hour to remove 10,000 Btu from the structure during the hot hours of the day in midsummer 1954 in Austin. Using these values to compute season costs is not recommended.

Average for all systems employing

water for condenser cooling was \$0.0193.

Average for all mechanical systems, regardless of type or circumstances was \$0.0199.

Air cooled condensers are subject to spring dust storms, but are relatively easily cleaned. Water cooled condensers are subject to scale formation by minerals in the water plus air borne dust caught in the tower. Thus, the performance of these water cooled condensers, new and free of scale, is likely to diminish faster than that of air cooled units.

The performance of both types of condenser given here is applicable only to Austin, Texas with its particular temperature and humidity relationships.

No attempt will be made in this report to summarize the performance characteristics of the installations in the village because there is still too much data to be analyzed.



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..in a new low-cut "dress"!



Only
60"
high!

Economy
"low" price
BLUE FRONT FURNACES

GH-90...gas model

NEW LOW SPACE-SAVING DESIGN!

NEW EASE OF INSTALLATION! NEW PROFIT



**Cash in on the "sales-pulling"
power of this trusted name!**

The name BLUE FRONT is one your heating customers have known and trusted for years . . . now it's back and with more sales-pulling power than ever! In the Blue Front furnace, your customers get the dependable heating efficiency and operating economy that has always made International Economy a "buy" word in heating! From where you sit, its new low space-saving design means full ease of installation when the job is "tight" on space. And thanks to Economy engineering know-how, once you install a BLUE FRONT, you can just about forget it!

Sell The Complete Economy Line

In the great Economy line you'll find everything you need to build a more profitable heating business — Oil, gas and coal-fired furnaces, summer air conditioners, BIG BOY commercial furnaces . . . and a line of International Snap-Lock fittings that's complete from boots to ducts! See your distributor — or write . . .



OH-85E...oil model



International HEATER COMPANY

UTICA 2, NEW YORK

Magic Chef uses the same dies for



es for carbon or Stainless Steel!

Magic Chef faced an interesting problem when they introduced a luxurious new 36" gas range. This new range was to be the ultimate in beauty and utility . . . with Stainless Steel panels for oven and broiler doors, as well as the storage compartment door.

Could these handsome, scuff-resistant panels be made using the same dies that were then in service producing the carbon steel equivalents?

Yes . . .

The Stainless Steel panels have fairly shallow draws, but they have sharp corners. Slight pinch-out on one panel was solved by using .030 gauge sheets instead of the standard .037. There is a slight spring-back on some sheets, but it is easily corrected by hand. Type 302 Stainless is used.

Magic Chef advertises these ranges as

having "beauty that is more than skin deep." That's a good motto for any product or part made of Stainless Steel, because its beauty and corrosion resistance do not depend upon a surface coating, or treatment, but are part of the metal itself.

To be extra sure, specify USS Stainless Steel.

See "THE UNITED STATES STEEL HOUR"—Televised alternate weeks—Consult your newspaper for time and station.

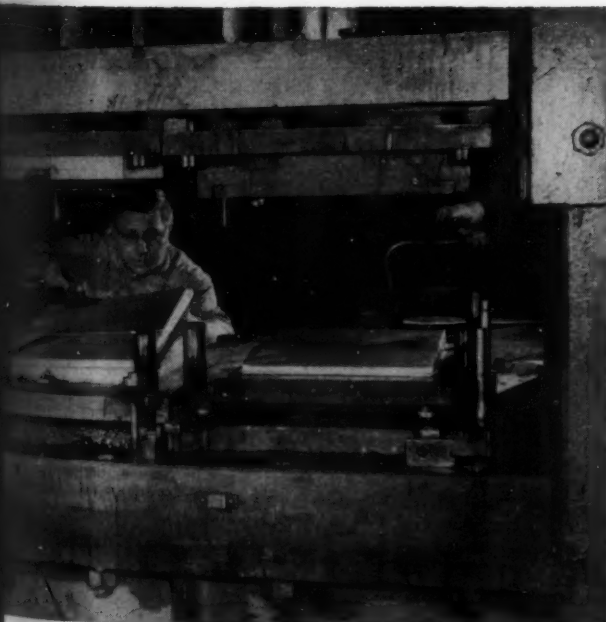
UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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USS STAINLESS STEEL



SHEETS • STRIP • PLATES • BARS • BILLETS
PIPE • TUBES • WIRE • SPECIAL SECTIONS

UNITED STATES STEEL



Housing Census Heating Data

Asheville, N.C. • Jackson, Mich. • Omaha • Waco, Tex. • York, Pa. • Youngstown, O.

SUGGESTIONS on how a warm air heating dealer can use some of the housing data available from the Bureau of Census were given in the Nov. 1954 American Artisan. Localities covered in the reports are metropolitan

areas that are socially and economically integrated with the central city. Data for various areas has been reported regularly in American Artisan since May 1953. Additional reports will continue to appear regularly.

Types of Fuel Used in Centrally Heated Dwelling Units

	Standard Metropolitan Areas											
	Asheville N.C.	Jackson Mich.	Omaha Nebr.				Waco Tex.	York Pa.	Youngstown Ohio			Mercer County, Pa.
	Buncombe County	Jackson County	The area	Douglas County	Sarpy County	Pottawattamie County, Ia.	McLennan County	York County	The area	Mahoning County	Trumbull County	
All dwelling units	35,616	33,254	107,672	82,248	4,246	21,268	40,168	61,054	149,623	71,984	45,698	31,941
Number reporting												
heating equipment	32,515	30,350	102,680	78,355	3,950	20,375	36,235	58,345	144,325	69,350	44,190	30,785
Central heating	11,670	21,840	79,335	64,840	2,125	12,370	3,300	40,115	144,460	58,110	34,345	22,005
Coal	8,770	14,205	34,035	29,490	1,285	3,260	60	22,135	80,125	39,490	24,150	16,485
Wood	210	365	370	205	50	115	45	295	410	105	195	110
Utility gas	190	3,570	25,445	17,215	235	7,995	2,925	3,470	30,455	17,115	8,525	4,815
Bottled gas	25	75	420	330	35	55	85	125	245	100	125	20
Liquid fuel	1,900	3,165	17,325	16,055	485	785	60	12,600	2,065	795	985	285
Other fuel	505	375	1,115	960	20	135	90	1,305	750	295	250	205
Not reporting	70	85	625	585	15	25	35	185	410	210	115	85

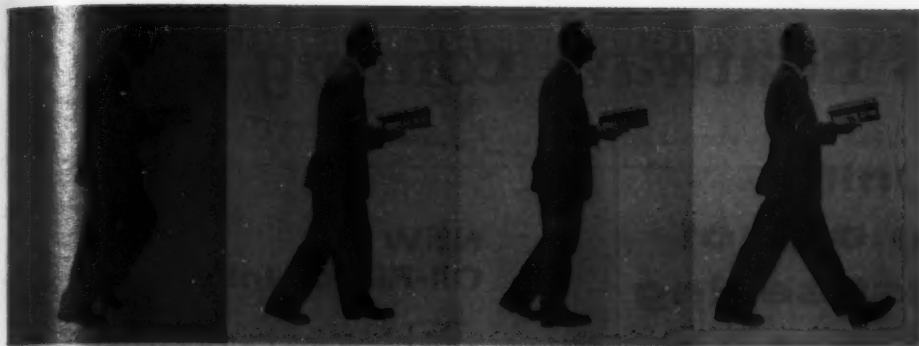
Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwell- ing units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Asheville, N.C. — Buncombe County															
All occupied units	28,180	20,645	3,660	2,055	1,240	580	16,055	14,400	1,655	12,125	6,245	2,430	1,740	1,145	505
HEATING EQUIPMENT															
Central heating	10,808	7,583	1,235	910	736	344	7,054	6,222	832	3,754	1,361	642	742	665	340
Piped steam or hot water	4,903	2,921	518	569	551	344	2,537	2,165	372	2,366	756	298	464	504	340
Warm air furnace	5,905	4,662	717	341	185	...	4,517	4,057	460	1,388	605	344	278	161	...
Noncentral heating, with flue	16,234	12,212	2,334	1,098	467	123	8,395	7,609	786	7,839	4,603	1,719	951	443	120
Nonctrl. htng., without flue; or not htd.	940	763	91	46	40	...	526	504	22	414	259	69	46	40	...
Not reported	183	85	...	...	...	98	63	63	...	120	22	...	...	...	98
YEAR BUILT															
1945 or later	3,976	3,617	168	49	122	20	3,002	2,942	60	974	675	108	49	122	30
1940 to 1944	1,113	935	135	25	...	...	672	672	...	441	281	135	25	...	...
1939 or earlier	22,277	15,541	3,276	1,908	1,053	499	12,085	10,506	1,579	10,192	5,035	2,106	1,593	974	400
Not reported	814	533	81	74	65	61	296	280	16	518	253	81	74	49	61

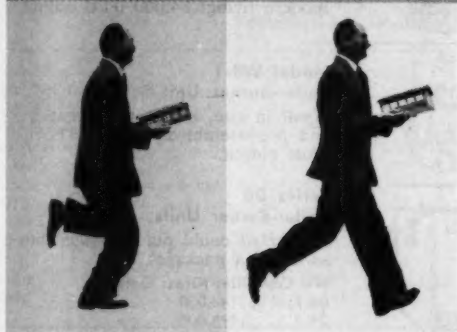
Standard Metropolitan Area of Jackson, Mich. — Jackson County

All occupied units	26,670	20,820	3,400	1,550	620	280	19,530	17,820	1,710	7,140	3,000	2,090	1,250	550	270
HEATING EQUIPMENT															
Central heating	19,319	14,595	2,584	1,450	528	163	14,321	12,808	1,513	4,998	1,786	1,461	1,150	438	163
Piped steam or hot water	2,165	932	349	464	267	153	1,168	884	284	997	48	162	400	244	163
Warm air furnace	17,154	13,662	2,235	986	261	10	13,153	11,924	1,229	4,001	1,738	1,299	750	214	30
Noncentral heating, with flue	5,999	5,144	673	75	61	46	4,415	4,239	176	1,584	905	507	75	61	30
Nonctrl. htng., without flue; or not htd.	765	572	101	25	31	36	453	453	...	312	119	101	25	31	36
Not reported	584	507	41	...	...	36	338	317	21	246	190	20	...	...	36
YEAR BUILT															
1945 or later	2,451	2,257	142	27	25	...	2,127	2,043	84	324	214	58	27	25	...
1940 to 1944	1,299	1,299	...	...	...	...	1,156	1,156	...	143	143	...	...	...	...
1939 or earlier	21,937	16,466	3,146	1,475	570	280	15,607	14,085	1,522	6,330	2,381	2,003	1,196	500	270
Not reported	986	800	113	48	25	...	643	538	105	343	262	29	27	25	...

(Continued on page 109)



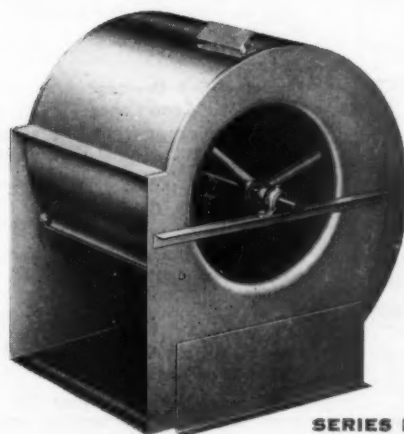
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highest
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and beat
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sales heatwave coming



11 New Units added to one of the fastest-selling heating lines

HEIL

Your sales mercury will climb to a torrid high with these 11 new hot-selling additions to the wide Heil line! Now even more than before, Heil offers you handsome, efficient heating units to suit *any* purse or purpose, every "wet" or warm air heating need... And remember... every Heil unit is designed to provide ease of installation and accessibility for service plus maximum performance. Heil quality has built a name you can merchandise and sell with pride... and profit.

NEW Gas-Fired Units!



**Model JFG-0 Highboy
Winter Air Conditioner**
Good looking space saver, priced right for cost-conscious builders! 90,000 BTU input.



**Model AFG-5 Lowboy
Winter Air Conditioner**
High powered newcomer in a sales proven design! 200,000 BTU input.



**Model DFG-0 Counterflow
Winter Air Conditioner**
Maximum heating efficiency for basementless homes! 90,000 BTU input.



**Models GC-11, GC-12 and GC-13
Conversion Gas Burners**
Clean, economical gas heat for every home... every heating system! Input rating: 140,000 to 400,000 BTU.

Heil's heating and cooling wholesalers save you money in shipping, inventory and office expenses. Support your Heil wholesaler, work with him... and profit!

The Heil Co. is a member of OHI, GAMA and an associate member of NHTA.

NEW Oil-Fired Units!



**Model JF-0 Highboy
Winter Air Conditioner**
Saves customers space and money... sells fast! 84,000 BTU output.



**Models AF-4 and AF-5 Lowboy
Winter Air Conditioners**
Distinctively styled, money-saving Lowboys for larger homes! 135,000 and 165,000 BTU output.



**Model DF-0 Counterflow
Winter Air Conditioner**
Luxurious, uniform comfort... for modern living! 84,000 BTU output.



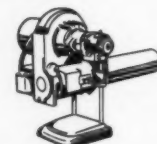
**Model WB-1
Boiler-Burner Unit**
Small in size, big in performance... and pre-assembled! 93,000 BTU gross output.



**Series DB
Boiler-Burner Units**
Only Heil could put *so much* into *so small* a package!
BTU Capacities (Gross Output):
DB-2.....144,000
DB-3.....198,000
DB-4.....252,000



**Model CB-1 Conversion Oil Burner
with Burner-mounted Primary!**
Converts wide range of home heating plants. Amazing burner-mounted control system eliminates the need for all line voltage wiring except for power supply!
1.65 GPH Maximum Firing Rate



**Model LB-1
Conversion Oil Burner**
New *low-pressure* burner converts heating plants to automatic systems, customers to buyers!
1.5 GPH Maximum Firing Rate

Write for descriptive literature on these and other outstanding Heil heating units. Ask, too, for valuable information concerning Heil territories available.

THE HEIL CO.

3081 W. Montana St., Milwaukee, Wis. Hillside, N. J.

SALES OFFICES: New York, N.Y.; Union, N.J.; Atlanta, Ga.; Cleveland, Ohio; Chicago, Ill.; Milwaukee, Wis.; Kansas City, Mo.; Denver, Colo.; Dallas, Texas; Los Angeles, Calif.; Seattle, Wash.

Housing Census Heating Data

(Continued from page 106)

Types of Nonfarm Dwelling Units, by Type of Heating and Year Built

	Total occupied						Owner occupied			Renter occupied					
	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more	Total	1 dwelling unit, detached	All other dwelling units	Total	1 dwelling unit, detached	Other 1, and 2 dwelling unit	3 and 4 dwelling unit	5 to 9 dwelling unit	10 dwelling unit or more
Standard Metropolitan Area of Omaha, Nebr. — Douglas and Sarpy Counties, Nebr. and Pottawattamie County, Iowa															
All occupied units	93,765	64,255	11,015	6,535	5,290	6,670	59,365	53,455	5,910	34,400	10,800	6,985	5,360	4,865	6,390
HEATING EQUIPMENT															
Central heating	72,888	48,989	8,292	5,066	4,422	6,119	47,000	42,419	4,581	25,888	6,570	5,089	4,204	4,130	5,895
Piped steam or hot water	16,135	5,337	1,855	1,580	2,425	4,938	5,527	4,392	1,135	10,608	945	1,256	1,345	2,292	4,770
Warm air furnace	56,753	43,652	6,437	3,486	1,997	1,181	41,473	38,027	3,446	15,280	5,625	3,833	2,859	1,838	1,125
Noncentral heating, with flue	16,202	12,331	2,238	894	503	236	10,042	9,181	861	6,160	3,150	1,597	757	476	180
Nonctrl. htng., without flue; or not htd.	1,993	1,312	211	246	134	90	983	817	166	1,010	495	149	168	108	90
Not reported	2,680	1,622	273	329	231	225	1,339	1,037	302	1,341	585	149	231	151	225
YEAR BUILT															
1945 or later	7,187	6,094	280	646	114	53	5,875	5,669	206	1,312	425	103	617	114	53
1940 to 1944	4,043	3,359	295	113	170	106	3,276	3,132	144	767	227	207	84	143	106
1939 or earlier	78,630	52,765	9,949	5,410	4,605	5,901	48,651	43,354	5,297	29,979	9,411	6,390	4,350	4,207	5,621
Not reported	3,901	2,033	491	366	401	610	1,559	1,296	263	2,342	737	285	309	401	610
Standard Metropolitan Area of Waco, Tex. — McLennan County															
All occupied units	32,825	23,935	5,350	2,135	1,075	330	18,690	16,715	1,975	14,135	7,220	3,850	1,745	1,000	320
HEATING EQUIPMENT															
Central heating	3,339	2,363	533	273	117	53	2,182	1,961	221	1,157	402	387	208	117	43
Piped steam or hot water	1,423	758	327	225	70	43	736	610	126	687	148	244	182	70	43
Warm air furnace	1,916	1,605	206	48	47	10	1,446	1,351	95	470	254	143	26	47	...
Noncentral heating, with flue	6,252	5,140	576	313	116	107	3,018	2,768	250	3,234	2,372	326	313	116	107
Nonctrl. htng., without flue; or not htd.	21,830	15,332	4,014	1,471	842	171	12,582	11,224	1,358	9,248	4,108	3,056	1,146	767	171
Not reported	1,407	1,102	227	78	...	...	909	763	146	498	339	81	78	...	...
YEAR BUILT															
1945 or later	6,218	5,625	411	97	85	...	4,650	4,576	74	1,568	1,049	337	97	85	...
1940 to 1944	3,279	2,522	243	291	170	53	2,027	1,953	74	1,252	569	169	291	170	53
1939 or earlier	22,207	15,038	4,475	1,650	777	267	11,588	9,795	1,793	10,619	5,243	3,147	1,260	702	267
Not reported	1,113	751	222	97	43	...	416	391	25	697	360	197	97	43	...
Standard Metropolitan Area of York, Pa. — York County															
All occupied units	49,390	22,090	22,215	3,525	1,225	335	31,085	18,140	12,945	18,305	3,950	10,075	2,920	1,080	280
HEATING EQUIPMENT															
Central heating	36,781	15,283	17,169	2,963	1,125	241	24,496	13,603	10,893	12,285	1,680	6,928	2,455	981	241
Piped steam or hot water	20,785	7,641	9,318	2,593	1,014	219	12,526	6,834	5,692	8,259	807	4,069	2,222	942	219
Warm air furnace	15,996	7,642	7,851	370	111	22	11,970	6,769	5,201	4,026	873	2,859	233	39	22
Noncentral heating, with flue	9,931	5,546	3,869	457	59	...	5,259	3,756	1,503	4,672	1,790	2,463	360	59	...
Nonctrl. htng., without flue; or not htd.	2,162	1,047	969	85	39	22	986	611	375	1,176	436	594	85	39	22
Not reported	522	219	205	21	...	77	347	175	172	175	44	88	21	...	22
YEAR BUILT															
1945 or later	4,657	4,163	323	36	65	70	4,026	3,776	250	631	387	109	...	65	70
1940 to 1944	2,919	2,505	353	28	33	...	2,377	2,324	53	542	181	300	28	33	...
1939 or earlier	41,444	15,239	21,485	3,351	1,127	242	24,524	11,909	12,615	16,920	3,350	9,639	2,782	982	187
Not reported	371	184	54	110	...	23	159	132	27	212	52	27	110	...	23
Standard Metropolitan Area of Youngstown, O. — Mahoning and Trumbull counties, Ohio and Mercer County, Pa.															
All occupied units	132,060	92,920	26,215	7,545	3,625	1,755	88,430	76,685	11,745	43,630	16,235	16,065	6,250	3,450	1,630
HEATING EQUIPMENT															
Central heating	105,572	74,683	21,207	5,762	2,584	1,336	73,491	63,664	9,827	32,081	11,019	12,704	4,611	2,467	1,280
Piped steam or hot water	9,211	4,664	2,113	846	546	1,042	4,798	3,761	1,037	4,413	903	1,234	702	546	1,028
Warm air furnace	96,361	70,019	19,094	4,916	2,038	294	68,693	59,903	8,790	27,668	10,116	11,470	3,909	1,921	252
Noncentral heating, with flue	22,041	15,843	3,957	1,156	844	241	12,947	11,440	1,507	9,094	4,403	2,639	1,053	786	213
Nonctrl. htng., without flue; or not htd.	2,773	1,420	729	462	109	53	1,177	946	231	1,596	474	553	421	109	39
Not reported	1,670	970	324	164	87	125	813	631	182	857	339	170	164	87	97
YEAR BUILT															
1945 or later	13,259	12,057	959	118	125	...	11,616	11,223	393	1,643	834	566	118	125	...
1940 to 1944	9,056	6,763	1,218	385	659	31	6,740	6,294	446	2,316	469	772	385	659	31
1939 or earlier	107,445	72,695	23,414	6,864	2,778	1,692	68,979	58,284	10,695	38,464	14,411	14,314	5,569	2,603	1,567
Not reported	2,299	1,405	622	178	63	31	1,094	884	210	1,205	521	412	178	63	31

OUTSTANDING!



INDUSTRIAL RELATIONS BUILDING IN RESEARCH AND ENGINEERING CENTER

Ford Motor Company—Dearborn, Mich.

Architect:

Voorhees, Walker, Foley & Smith, N. Y., N. Y.

General Contractor:

W. E. Wood Company, Detroit, Mich.

Sheet Metal Contractor:

Schreiber Roofing Company, Detroit, Mich.

Another installation of Chase® Copper Base Flashing Expansion Joint!

More than 1600 feet of Chase Copper Base Flashing went into this new Ford Motor Company building, protecting the vital juncture where the flat, built-up roof meets vertical masonry walls.

A solid copper perimeter flashes the base, and though every seam is soldered, the unique Chase Copper Base Flashing Expansion Joint will allow for expansion and contraction of the metal!

Now, there is no need to allow for temperature changes by using loose-lock, "hope-for-the-best" seams. Simply install Chase Copper Base Flashing Expansion Joint! The push-pull of temperature change is absorbed safely and surely, while seams stay completely watertight!

See that *your* installations get the protection of Chase Copper Base Flashing Expansion Joint—for information and specifications, write Chase!



*Installing Chase Copper
Base Flashing Expansion Joint*

Chase

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*here's a year 'round
air conditioner*

that's

different

...with a difference that pays!

Permaglas®



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HEATING AND AIR CONDITIONING



Permaglas glass-lined water heaters mean freedom from rust and corrosion to over 2,500,000 families. A. O. Smith-Burkay Commercial Water Heaters are the world's most popular in the field.



Permaglas is going places.....are you aboard?

A few valuable franchises are available.
Write now for full information.

Through research  ...a better way

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CORPORATION

PERMAGLAS DIVISION • KANKAKEE, ILLINOIS

This ad appears in June "Better Homes & Gardens"

THIS MESSAGE TO
HOMEBUYERS IS
IMPORTANT TO YOUR

"AIR CONDITIONED FUTURE"

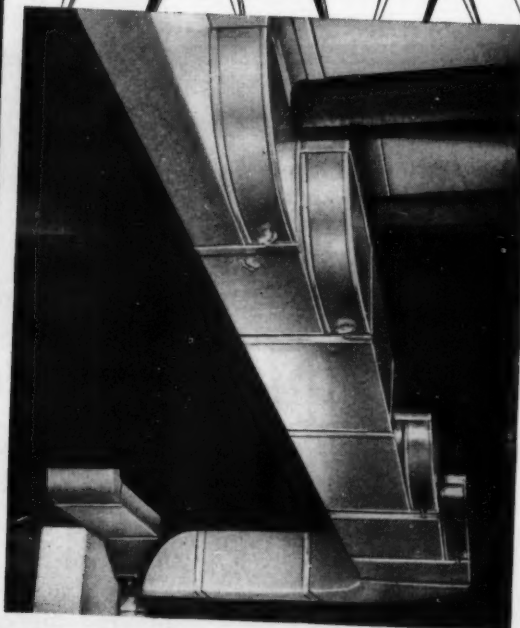
You know the big future of your business is in air conditioning... that right now people want homes either fully equipped or ready to add summer cooling. But summer cooling means moisture condensation... and, in ordinary ducts, the danger of rust. So more than ever, homes need rustproof ducts... of Reynolds Aluminum.

That's the message Reynolds is presenting regularly to consumers in "Better Homes & Gardens," "Living for Young Homemakers" and "Small Homes Guide" and on the hit TV show, "MR. PEEPERS." Reynolds is carrying this promotion to builders in "House & Home," "American Builder" and "Practical Builder."

It's *in your interest* to promote the rustproof ducts that America's "air conditioned future" demands... aluminum ducts. Remember, aluminum has the lowest heat emissivity and it also speeds air flow because of its smoother surface. Use it, and identify your ductwork with the "Designed in Reynolds Aluminum" seal. For consumer literature and supply of Seals, write to

Reynolds Metals Company, General Sales Office, 2500 South Third Street, Louisville 1, Ky.

Your
**AIR CONDITIONED
FUTURE**
demands...



Rustproof Ducts of



**REYNOLDS
ALUMINUM**

You're bound to have complete home air conditioning. And that means moisture condensation on cold ducts... the threat of rust damage to duct system, rust stains through walls, expensive replacement. Insure yourself! Look for this Seal that guarantees rustproof ducts. Write for folder that also tells how aluminum speeds air flow, improves efficiency.

Reynolds Metals Company,
General Sales Office,
Louisville 1, Kentucky.

SEE "MR. PEEPERS," starring Wally Cox, Sundays, NBC-TV Network.



SEE "MR. PEEPERS," starring Wally Cox, Sundays, NBC-TV Network.

REYNOLDS  **ALUMINUM**

*Ready
Now!*

48

BRAND NEW
COOLING
SALES AIDS!



Ask your Sunbeam distributor to show you the giant new Sunbeam 1955 Cooling Sales Promotion Package. It's crammed with colorful, hard-hitting advertising-merchandising aids of every description. It has everything it takes to help you find prospects quickly—and close orders fast—on Sunbeam residential and commercial air conditioners made by American-Standard.

DIRECT MAIL and point-of-sale literature—fully appropriate for quality products yet packed with attention-getting gimmicks and hard sell. Jumbo postcards, self mailers and envelope stuffers are included.

NEWSPAPER AD MATS. There's a big selection—all sizes and a wide range of sales approaches.

RADIO AND TV SPOTS. The Sunbeam package brings you a full array of network quality material, including four new one-minute TV filmed commercials plus new radio scripts that establish you as local cooling headquarters.

SHOWROOM MERCHANDISING AIDS. Signs, window streamers, decals and other point-of-sale helpers, too! There's even a 24-page booklet telling how to make your cooling sales program pay highest dividends.

SUNBEAM COOPERATIVE ADVERTISING PLAN reimburses you for a liberal part of your newspaper, radio and TV costs.

**Contact Your Sunbeam Distributor
For Full Details**

You'll find him listed under "Air Conditioning Equipment and Supplies" or "Furnaces" in your classified telephone directory.

**SUNBEAM
AIR CONDITIONER DIVISION**

American Radiator & Standard Sanitary Corporation
ELYRIA, OHIO

Serving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • HEWAMEX BOILERS • ROSS EXCHANGERS • SUNBEAM AIR CONDITIONERS

AMERICAN ARTISAN, MAY 1955



Open End Mortgage — Sales Tool for Cooling Jobs

By William Hurd Hillyer

A favorable understanding between builder, owner, lender and warm air heating dealer can earmark mortgage expansions for future cooling installations — to the advantage of everyone concerned

NEW FINANCING METHODS for residential cooling installations are as profitable to the warm air heating dealer as the most approved tools of his trade. Among these methods the open end mortgage ranks high as a business builder.

This type of mortgage, an immigrant to our country, has long been employed in England and is well established in British common law, which is the basis of American jurisprudence. In our land certain states have already passed laws establishing priority of such mortgages over *intervening liens*. Where laws are lacking, the open end mortgage lender is protected by a number of court decisions. These rulings uphold the priority of *readvances* over judgments and subsequent encumbrances except mechanics' liens, real estate taxes, and some others.

Open for Expansion

What is an open end mortgage and how can it help increase the dealer's residential cooling business? This type of real estate financing is available to lenders both large and small. As its name implies it is open for expansion or *readvances* at any time during its term, usually up to the original principal amount. That is to say, if the original principal was \$10,000 and it had been reduced by installments to \$7500, readvances up to a total of \$2500 would be possible. Proceeds of these readvances could be used to pay for air conditioning or other new equipment in the home.

The readvances are made possible by a special clause, which may be incorporated in the original mortgage or may be added by agreement. The *open end* clause used by one bank, a representative lender in the field, is an example:

"In addition to the bond or obligation above mentioned, this mortgage is intended to secure any and all further loans or indebtedness owed or to be owed by the mortgagor to the mortgagee, and it is stipulated that the maximum amount secured by this mortgage at execution, or which under any contingency may be secured thereby at any time in the future, shall be the principal amount hereof. The obligation of the mortgagee to make further or future advances or readvances shall be optional with the mortgagee. Readvances may be made under the provisions hereof to the present or to any future owner of the mortgaged premises."

Specify Future Cooling Installations

An extra clause in the mortgage covers heating equipment. The bank's solicitor advises that a specific reference to cooling equipment and installations be inserted in this clause as "conclusive evidence of intent."

Since this bank began using an open end clause in its mortgages about four years ago, relatively few readvances have been granted on these original instruments because many of the loans have not been sufficiently reduced. However, the bank has made a number of advances on mortgages which do not contain the open end clause, by having the borrower join with the bank in a *notification agreement*, which incorporates an open end clause in the original mortgage. It also sets up the amount of the advance and the terms of repayment. Arrangements have been made with three title companies to insure these advances in their regular form of title policy.

The open end mortgage has been featured in a number of housing developments. Builders advise their buyers

(Continued on page 118)

NEW... "PLUG-IN" ROOM THERMOSTAT for year 'round air conditioning

MOST SIMPLE INSTALLATION EVER!

Make all connections
on mounting base...
then, simply "plug in"
the thermostat.



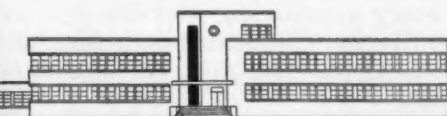
IN ADDITION...

no other thermostat has all these great features!

- Compact, modern horizontal "New Look" in room thermostats.
- Attractive neutral-colored plastic cover blends with any color scheme.
- Single dial heating and cooling setting simplifies homeowner's operation.
- Penn "heat anticipation" holds heating temperature within one degree of selected level.
- Penn "cold anticipation" assures closer control of cooling temperature and lowest relative humidity.
- Complete flexibility of fan control to meet all design and application conditions.
- Choice of one manual switch for system and one for fan... or single manual switch combining both.
- Snap-acting magnet contacts, time-tested on Penn heating and cooling thermostats in over 20 years of field experience.
- Changeover from heating to cooling may be *manual only; automatic only; or combination manual and automatic* for homeowner selection according to his needs.
- Seven models available... for cooling only; heating and cooling; or heating and two-stage cooling... to fulfill all possible air conditioning needs.

Don't settle for less when Penn costs no more! Be sure the packaged air conditioning you sell and install is fully equipped with Penn automatic controls. **Penn Controls, Inc., Goshen, Indiana.**

Penn



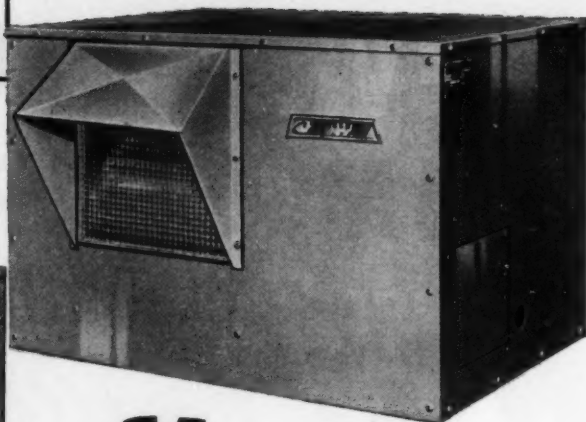
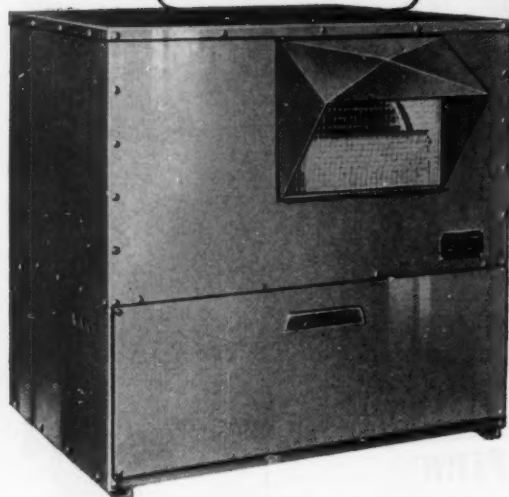
AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

AMERICAN ARTISAN, MAY 1955

Type 907
air-cooled
condenser

Type 908
air-cooled
condensing unit



Mueller Climatrol

ends your air-conditioning water worries

... with two new, remote, air-cooled units

Type 907 — Converts any water-cooled unit (employing gas-cooled compressor) to air cooling. Available in two-, three-, and five-hp sizes. Weather-proof, rubber-base finish, to permit outdoor installation. Type 907 uses Freon 12 in the 2-hp size; Freon 22 in the 3- and 5-hp sizes. Angle hoods for inlet and outlet openings are available as optional equipment.

Type 907 contains condensing coil, fan motor and centrifugal blower. It employs the compressor in the air-conditioning unit to which it is connected.

Type 908 — Available in two-, three- and five-hp sizes, complete with heavy-duty compressor, for installation with any remote coil unit. All Type 908 units use 1100 CFM/ton condenser air flow and operate efficiently in ambients up to 110° F — considerably above average. The refrigerant is Freon 12 or 22.

Like the Type 907, the 908 has a weather-proof, rubber-base finish, to permit installing outside. Angle hoods for inlet and outlet openings are available as optional equipment.

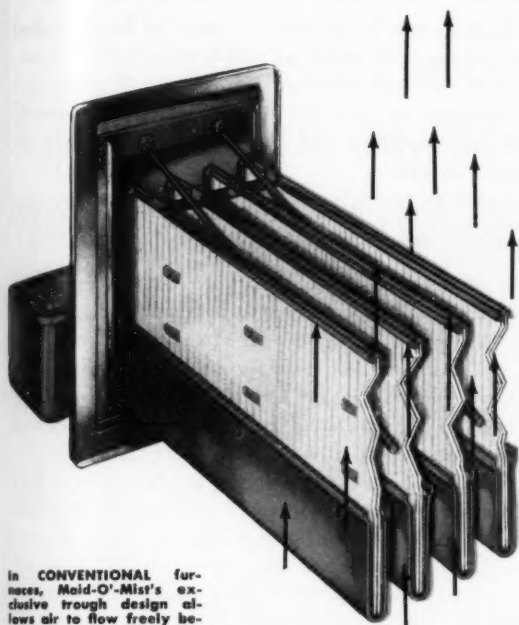
Yes, regardless of the water conditions in your area, cooling can be a big, profitable part of your business. With Mueller Climatrol's complete line of equipment, you have a size and type for almost every installation. Get detailed facts and figures on these two new Mueller Climatrol condensing units now. Write Mueller Climatrol, Dept. 155, 2030 W. Oklahoma Ave., Milwaukee 15, Wisconsin.

D-189

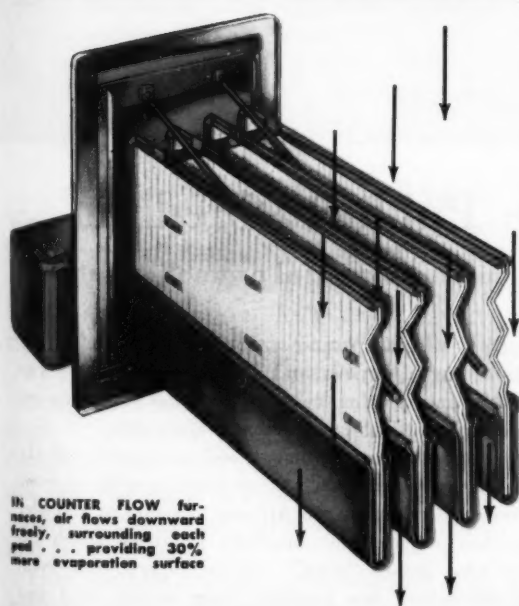


NEARLY 100 YEARS OF MANUFACTURING QUALITY COMFORT EQUIPMENT

Conventional or Counter Flow!



In CONVENTIONAL furnaces, Maid-O'-Mist's exclusive trough design allows air to flow freely between evaporator pads



In COUNTER FLOW furnaces, air flows downward freely, surrounding each pad . . . providing 30% more evaporation surface

MAID-O'-MIST CONVECTOR HUMIDIFIER

is the **ONLY** standard unit that fits
BOTH TYPES of warm air furnaces

This versatile convector humidifier is ideal for the small plenums of all modern warm air furnaces . . . conventional, counter flow and year-around air-conditioning units.

Unlike ordinary warm air furnace humidifiers, the Maid-O'-Mist has no flat bottom to block the flow of warm air. Maid-O'-Mist's exclusive design—individual $\frac{3}{8}$ " copper water troughs spaced 1" apart—allows unrestricted air flow between patented evaporator pads . . . provides 30% more evaporating surface necessary in short-cycle modern heating.

Maid-O'-Mist's design makes installation easy. There's no fitting or fastening to the back of the plenum. The unit is entirely supported by the flange frame in front.



FOR COUNTER FLOW WARM
AIR FURNACES



FOR CONVENTIONAL WARM
AIR FURNACES

Maid-O'-Mist, because of its narrow trough design, can be installed on either side of counter flow furnaces having a minimum air passage of 3 inches.

Installation is fast and easy. Just cut opening in plenum and make water connections. 13 sizes available with evaporation capacities of 1 to 10 gals. per day.

60% LESS AIR
RESTRICTION
IN PLENUM

30% MORE
EVAPORATION
AREA

50% LESS
INSTALLATION
TIME

Get full information on these competitively-priced units from
your jobber or write for Bulletin 701-B



AUTOMATIC HUMIDIFIERS AUTO-VENTS
WATER LINE CONTROLS . HEATING SPECIALTIES

MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD . CHICAGO 41, ILL.

Open End Mortgage Builds Cooling Sales

(Continued from page 114)

that they may, when the mortgage has been reduced, obtain a readvance for improvements — such as installation of cooling equipment — to the extent of the reduction.

Compared with the usual FHA modernization loan, the open end mortgage is very attractive to the borrower. Each \$1000 of a three year modernization loan requires a monthly payment of \$34.94; a \$1000 readvance under an open end mortgage which has 15 years to run requires a monthly payment of only \$7.91. If the mortgage is extended sufficiently to liquidate the readvance and the old balance, no increase in the monthly payment is required.

Mortgage Broadens Sales Potential

The practical value of the open end mortgage to cooling contractors is sufficiently obvious. Let us take a housing development, for example, and assume that there is a heating contract covering the entire project. Summer cooling, however, is something not all the buyers can afford at the outset because of additional cost. Should a buyer decide independently to add a cooling system, he would have to purchase and install the equipment at retail and probably pay for it in installments.

On the other hand, the builder of the project needs only obtain a long term open end mortgage providing for an advance that may be spread over its entire life by a slight increase in the monthly payments. Thus air

conditioning will be provided for many of his individual home buyers, who could not otherwise afford it. If preferred, the monthly payment may remain the same and the mortgage be extended proportionately. As already noted, the buyers in such case would not face any installment increase.

Everybody Benefits

The ideal situation is created when the builder is sold on air conditioning before construction is started. Then the builder enters into an overall agreement, at the outset, with the warm air heating dealer for the entire job, providing for year 'round air conditioning in any or all of the units at the option of individual owners within a specified price and time limit.

As a result the respective parties are benefited in several ways: 1) the builder gets better prices with less effort; 2) the individual buyer enjoys the luxury of year 'round air conditioning at little or no monthly payment increase; 3) the warm air heating dealer increases his volume of business substantially through the medium of a single agreement, without venturing into the strictly retail market. The open end mortgage is also a highly flexible device for financing of office, store and other jobs.

In any event, the cooling dealer should work closely with owner, builder, general contractor and lending institution in order to take full advantage of the open end mortgage opportunities.

Don't Overlook the Free Publicity Medium

... ingredient for successful promotion formula

THE IMPORTANCE of paid advertising as a means of reaching potential customers is generally recognized, and most contractor-dealers use this approach to advantage. However, the value of the publicity opportunities obtainable through the editorial columns of newspapers, magazines, special publications and other such media is not so widely recognized.

It is true that free publicity — unlike paid advertising — does not usually result in immediate sales. Its value, rather, lies in its power as a good will builder, which in the long run can be a powerful factor in the promotion of sales. The dealer who, through a well-planned publicity program, has made himself known to community residents and others as a participant in civic programs, as the sponsor of a local contest, as the installer of an unusual heating or air conditioning system, is often in a better position saleswise than his more retiring

competitor who has remained in the background.

Feature articles, news and editorials represent a vast promotion medium for the dealer who has something important and worthwhile to present to the public.

Because many dealers, though well acquainted with the mechanics of advertising, are not familiar with the basic processes of publicity, the Airtemp division of Chrysler Corp. has prepared the brochure *Publicity* which explains what makes "news" (annual reports, new company affiliations, new products, large orders, etc.) and presents pertinent information relating to media of publicity, preparation of press releases, the obtaining of photographs and the presentation of product and installation publicity. It points out that every type of media has two barrels — *paid advertising and free publicity* — and urges the dealer to use both methods to promote his business to the fullest advantage.

USS Galvanized Sheets

*—the finest by far
and here they are*



... at your nearby U. S. Steel Supply warehouse.
We stock USS Galvanized Sheets in any width and length you may require, from 10 to 30 G.S.G.

From the most severe and intricate forming operations to the very simplest, you'll always get best results with USS Galvanized Sheets. That's because they have the tightest zinc coating. Bend them, roll them, cut them, stamp them, solder or spot weld them ... there'll be no flaking or cracking. You can count on their uniformity too ... in ductility, flatness and surface finish. Products fabricated with USS Galvanized Sheets are really rust-resisting ... stay clean and good looking.

Our complete stocks of sheets and strip also include: galvanized, cold rolled, stainless, hot rolled, Paint-bond and aluminum.

U. S. STEEL SUPPLY DIVISION

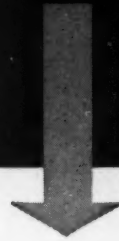
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208 So. La Salle St., Chicago 4, Ill.



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Call
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for ALL your
steel needs...



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Aluminum
Floor Plates, Industrial Flooring
Industrial Supplies and Machinery
Bars—Hot and Cold Finished
Plates
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High Strength Steels
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FREE... OUR LATEST STOCK LIST

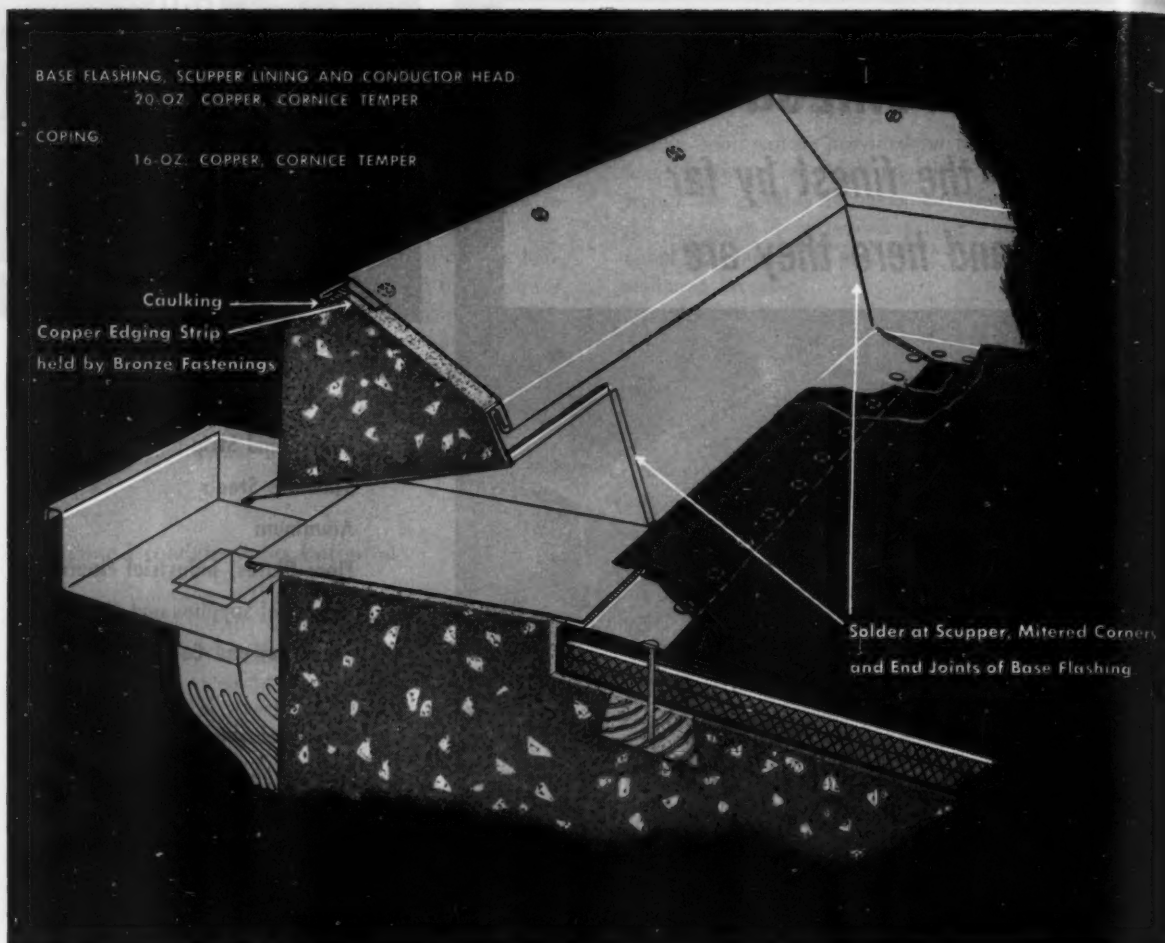
Contains everything you'll want to know about our huge stocks ... tells what's actually in stock at our warehouse nearest you. All data is specific, complete, accurate—and easy to find. Send the coupon today for this big, all-new Stock List.

U. S. Steel Supply Division, Dept. 245
208 So. La Salle St., Chicago 4, Illinois

Gentlemen:

Please send me, without charge, your latest Stock List.

Name
Company
Address
City State



Flashing design for parapet with roof scupper

On buildings where the parapet is designed as little more than a curb and in climates where snowfall is not severe, scuppers leading to outside downspouts offer an economical method of providing for roof drainage.

This drawing shows the details of a base flashing and scupper lining secured to the roof deck. A 16-oz.

copper coping, joined to the 20-oz. base flashing with a loose clinch lock, protects the vertical mortar joints of the masonry. Free-sliding, weathertight expansion joints should be installed on the copper coping at 24-ft. intervals and wherever expansion is provided for in the structure.



Do you have the **FREE Anaconda Portfolio of Sheet Metal Drawings**?

Each drawing shows a new or improved way to apply sheet copper. Each is printed on a separate 8½ x 11-inch page, handy for quick-reference filing. This entire series may be obtained absolutely **FREE**. Write today for Portfolio S to **The American Brass Company, Waterbury 20, Conn.** In Canada: **Anaconda American Brass Ltd., New Toronto, Ontario.**

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work — use

ANACONDA[®]
copper

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Honeywell

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your
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and
purpose



One sour note can spoil a symphony

And a control system is like a symphony orchestra with each instrument or control working together in perfect harmony. That's why it's important to use a system in which the controls are specifically designed to work with each other . . . That's why there is a *complete* Honeywell control system to meet every control requirement.



MINNEAPOLIS
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First in Controls



Readily Available Westinghouse Fans will help you increase production...employee efficiency!

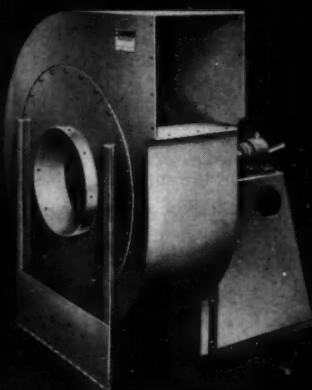


Direct-Connected
(6 Sizes)

VENTILATING SETS



V-belt driven
(12 sizes)



High-efficiency
Steel casing
(11 sizes)

INDUSTRIAL FANS



Cast iron casing
(10 sizes)

Whatever your air handling problem . . . smoke, fumes, vapor, dust, wood shavings, granular material or ventilating . . . these Westinghouse fans are designed to handle or remove them . . . efficiently and economically.

INDUSTRIAL FANS (Steel Casing) . . . high efficiency for general Air Handling; fume and dust removal; 11 sizes, each with 3 types of wheel for specific applications. Wheel diameters 19" to 64"; inlet diameters 11" to 37".

INDUSTRIAL FANS (Cast Iron Casing) . . . ruggedly built, corrosion resisting. For low volume fume or dust removal, materials conveying, industrial drying and cooling. In 10 sizes, each

with 3 types of wheel for specific applications. Wheel diameters 8" to 34"; inlet diameters 4½" to 18".

VENTILATING SETS (Direct-Connected) . . . Compact, efficient, ready-to-run. Especially suited for small ventilating installations. Cleanable radial blade wheel minimizes problem of handling airborne dirt and grease. Six sizes. Wheel diameters 6" to 15"; inlet diameters 6" to 14".

VENTILATING SETS (V-belt driven) . . . Self-contained. Install indoors or outdoors in a wide variety of heating, ventilating or air conditioning applications. Twelve sizes. Wheel diameters 9" to 30"; inlet diameters 10" to 32¾".

WESTINGHOUSE AIR HANDLING

YOU CAN BE SURE...IF IT'S

Westinghouse

4-B0432

Westinghouse Electric Corporation
Sturtevant Division, Dept. 7D
Hyde Park, Boston 36, Mass.

Please send facts on Industrial Fans and Ventilating Sets.

NAME AND TITLE.....

COMPANY.....

CITY.....STATE.....

Trim the Sales Tax

With Your Service Contract

Proper separation of labor and material charges can save money on service work. What's more, the materials themselves aren't always taxable under many conditions

A RECENT DECISION by an Ohio court suggests a feature in the imposition of sales taxes that may in some instances light the way for air conditioning and warm air heating contractors to lower taxes of this character when a part of the contract price is for labor and services.

In this case a contractor undertook the alteration and improvement of two buildings in that state. The state sales tax statute imposes a tax on the *price* with the definition that, "Price does not include the consideration received for labor or services in installing, applying, remodeling or repairing the property sold if the consideration for such services is separately stated from the consideration received for the tangible personal property transferred in the retail sale."

Books Must Show Breakdown

The contractor failed to separate the amount for labor and services from that for material in his bills under the contract. He did, however, separate those items on his books and in his bids for the contract he showed a breakdown of the charge for labor and for material. In sustaining the contention of the contractor that he should pay the sales tax only on the sale of material, the court said:

"The seller who separately states such consideration on his books of account and who collects the proper tax from his customer is entitled to have excepted from the sales tax the consideration for services rendered," and referred to a decision in a similar case by the same court, in which it had been held:

"Where a person sells material to another and in connection therewith furnishes labor or services in applying such material to his customer's property, the entire trans-

action shall be construed as a sale and subject to tax unless there is a clear separation in the making or billing of a charge therefor, of the material furnished and the labor or services performed."

In all these cases however, in which a dealer or contractor is relieved from the payment of a sales tax on the portion of the contract price which represents services or labor and is taxed only on the material he sells, the laws require a distinct separation of labor and material.

A similar tax case occurred in the same state when a dealer in automobile accessories, in order to avoid a sales tax on his charges for retreading and recapping tires, merely added the item *tax on material* to the total of each invoice; the tax was computed on the price of the material used. The invoice did not show a breakdown of the material and labor charges and a court denied the dealer any relief from a sales tax on the total invoice.

Separation Is Essential

"The tax imposed is on the entire amount of the invoice," said the court. "There is no tax for labor or service if the dealer separates the items of labor or services from the material furnished. There must be a fair compliance with the provisions for the separation of the items of labor or services from the items of material, if the exception provided in such a case is to be enjoyed." From an examination of this invoice there is no such separation."

A similar situation exists in application of the Illinois sales tax or Retailers Occupation Tax law. The state statute reads, "A tax is imposed upon persons engaged in the business of selling tangible personal property at retail."

A tax was imposed in that state on the sale of railroad ties which were to be seasoned and treated by the seller before delivery. "It is well settled," said the court, "that if the thing sold is a service and not a sale of tangible

(Continued on page 128)

Albert W. Gray, author of this article, has had over 20 years' experience as an attorney in the courts of New York City. He has written widely on legal matters and is the author of *The Family Legal Adviser*.



**Land
'em
two at
a time!**

**Here's how AIRTEMP can help you sell heating
plus cooling for double profit on more jobs!**

With the most complete line of furnaces and companion cooling units, Airtemp now makes year 'round installations practical and economical for more homes than ever before. In small homes and basementless homes, you can install an Airtemp system that takes up *no living area floor space whatsoever*. For homes where water is scarce in summer, there's Airtemp equipment that provides refrigerated cooling *without using one drop of water*.

And "doubling up" is so easy with Airtemp heating and cooling! Perfectly matched units speed your work. And the sensational new Airtemp "Spacesaver" combination, illustrated at right, reduces the installation of year 'round air conditioning to the simplest terms yet!

This ready-made opportunity to realize a double profit on more jobs is only one of many advantages you will have with the Airtemp Franchise. Get all the facts! Write to Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



CLOSET "Spacesaver" showing Hi-Boy Furnace with "V" cooling coil on top and condensing unit outside house.



BASEMENT "Spacesaver" with Airtemp Lo-Boy Furnace.



"The Line That Pays"

Airtemp
DIVISION OF CHRYSLER

HEATING • AIR CONDITIONING FOR
HOMES, BUSINESS AND INDUSTRY



FAIL-SAFE!



NEW

PERFEX SERIES 480 REMOTE BULB, LIQUID FILL COMBINATION FAN & LIMIT CONTROL WITH SINGLE ELEMENT

Look Inside

TO FIND THE REASONS FOR PERFEX FINER FAIL-SAFE PERFORMANCE!

- Reliable — Simple design
- Smaller, lighter, more compact
- Powerful solid FAIL-SAFE liquid fill
- Flexible capillary — various lengths
- Adjustable fan cutout
- Mounts, operates in any position
- For either line or low voltage circuits
- Available without case and cover
- Mounts flush

Proven FAIL-SAFE performance is assured with the Perflex Combination Fan and Limit Control, designed to meet the needs of any forced warm air system installation. Its single thermal element actuates both fan switch and limit switch. By every standard the Series 480 is the finest — you can **depend** on Perflex engineering and quality. Write for complete literature.

**You specify with CONFIDENCE
when you specify Perflex**



PERFEX CONTROLS DIVISION, General Controls Co., Iron Mountain, Mich. & Guelph, Ont., Canada



Factory Branches in all Principal Cities • Mfrs. of Automatic Controls for Heating, Air Conditioning and Appliances



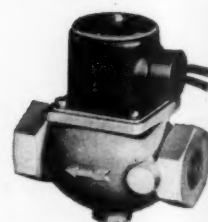
**SERIES 404
WARM AIR
LIMIT CONTROL**

**SERIES 175
MAGIC DIAL
THERMOSTAT**



480-B

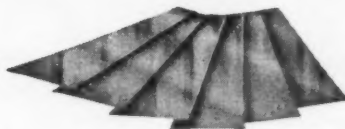
**SERIES 3500
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Your steel warehouse distributor keeps large stocks of stainless on hand. Buy stainless as you need it.



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by faster service

Your steel distributor, being nearer to you, assures you of quicker deliveries to meet production schedules.



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MicroRold Stainless Steel Sheet is available through steel warehouse distributors strategically located at points most accessible to fabricators of stainless steel products. These distributors, being closely associated with the industry, not only facilitate the selection and delivery of stainless sheets but can also provide technical assistance on your stainless steel fabricating problems.

Your steel distributor will explain the advantages of buying MicroRold with "Thinness Control." This "Thinness Control" in

the manufacture of MicroRold stainless sheets means the decimal thickness is uniform throughout the length and width. MicroRold is rolled to exceptionally close tolerances, as low as 3% average (plus or minus) as compared to the A.I.S.I. allowable of plus or minus 10%. Each .001" in thickness saved results in a savings of 1.26 pounds when figured on a standard 36"x 120" sheet. MicroRold's controlled accuracy of gauge gives you more stainless area per ton or the equivalent area with lesser weight.

*Consult your nearest MicroRold Stainless Steel Distributor.
He will gladly tell you the MicroRold story.*



WASHINGTON STEEL Corporation

Washington, Pennsylvania

Sales Tax Liability Depends on Service Rendered

(Continued from page 124)

personal property, the one furnishing such service is not engaged in a business that is subject to the tax."

The same feature of the sales tax law was before a court of that state a few years previous, when a dealer who was engaged in the restyling and repairing of fur coats objected to the imposition of the tax on the ground that his charges were for services and not for goods. An average of 15 percent of the charge was for material, 25 percent was for labor and the remaining 60 percent for overhead and profit.

Title Transferred to Customer

Holding that the sale of the material in this repair work was not subject to tax, the court said:

"The rule may be adduced that to render a vocation taxable under the act it must appear that the business of the taxpayer is that of selling tangible personal property, rather than rendering service. In the case before us it is admitted that title to the fur pieces and linings used in repairing a garment is transferred by the owner of the business to his customer.

"It cannot be said that the fact of the sale of tangible personal property for use or consumption, of itself, brings the seller under the act unless he is engaged in the business of selling, even though the materials furnished retain their identity and have a salvage value.

Is It Service or Retail Sales?

"We are of the opinion that the taxpayer should be held to be engaged in the repair business rather than in the retail sales business so far as the sales of materials are concerned and that such sales are but an incident to the repair business."

This claim for exemption from the tax on service or labor under the sales tax was recently before the Court of Appeals in Georgia. The controversy arose over imposition of a sales tax on the charges made by a shoemaker for repair work. The shoemaker maintained the materials he used were incidental and his charge was primarily for labor.

In sustaining this contention the Georgia court said, "We do not think that the actual cost or monetary value of the materials used is determinative. On such a basis in the present case it would follow that the price of the materials on the average shoe repair job, being 50 percent of the total price, would be a consequential element of the transaction, making it a retail sale.

"However we think that the main consideration should be the purpose of the customer who primarily wishes to buy the skilled services of the shoe repair man, because such services cannot be performed by the customer him-

self because he lacks the equipment, time or skill required to perform the service.

Materials Incidental to Service

"Under such circumstances the sale of various grades or qualities of materials by the shoe repairman is really incidental to and but a means of rendering the services which his customers want."

The business of one who under the law is not a dealer "because he is not one who buys to sell again" is clearly defined in a Pennsylvania case involving sales tax on the receipts of a master plumber.

The plumber's business, according to the court, had three branches: 1) the performance of contracts in which he furnished both material and labor; 2) jobbing and repairing; 3) the sale of materials purchased from others.

Holding that the plumber was not a dealer within the meaning of the sales tax law in the first two instances, the court said:

Craftsman Or Dealer?

"As to the first and second branches of his business our conclusion is that he is not liable to pay a mercantile license tax thereon. Plumbers and like artisans and craftsmen, such as carpenters, bricklayers, stone masons, plasterers, etc., who contract to furnish labor and materials for an undertaking either in its construction in the first instance or its alteration, are not within the scope of the tax act and are not comprehended within the term 'dealers,' who are the persons from whom that particular impost is collectible.

"Such a craftsman is not a dealer because he is not one who buys to sell again in the sense in which merchandise is bought to sell. There is nothing in the act which would embrace within its terms a master or licensed plumber so far as the contract and jobbing or repair features in his business are concerned."

Possibilities Deserve Consideration

These exceptions made by the courts to the imposition of sales taxes are common to every state in which sales tax statutes have been enacted. None of the sales tax laws are identical but the possibility of reducing this tax by the separation of material from labor costs deserves consideration. These statutes levy on the proceeds of sales, not the wages paid for labor or services; in order to gain any benefit these two items should be stated separately in any bill or invoice.

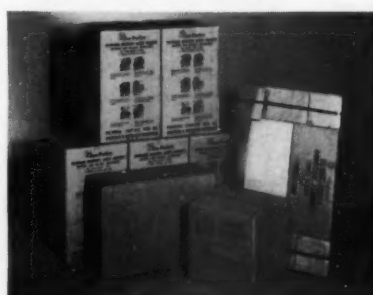
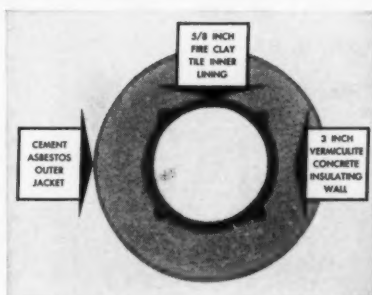
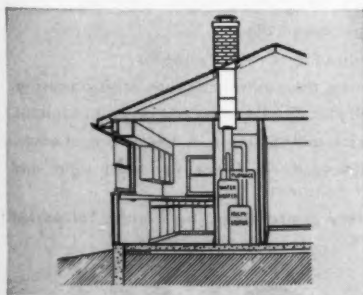
[Note: While this discussion applies to actual cases, it should be remembered that legal rules vary in different states.]



Earn more dollars profit on each heating job by selling and installing the *entire* heating system — furnace and masonry chimney. You can do it easily with Van-Packer, the factory-engineered, completely packaged, lifetime masonry chimney. You make a high *clear* profit on each chimney you sell — simply install it, take your profit, forget it. No service call-backs on the Van-Packer Packaged Masonry Chimney.

It's the only masonry chimney tested and listed by UL for coal, oil or gas for all home heating plants and incinerators, and is approved by major building codes. You can easily install the Van-Packer Chimney in 3 hours or less, anytime after house is framed in, even after house has been completed. Immediate delivery to job through your local heating supply jobber.

Profit on the entire heating system — sell the furnace and Van-Packer Chimney



34% greater draft with the Van-Packer, compared to 8" x 12" brick chimney, plus almost twice the venting capacity — your furnace operates more efficiently. Ceiling suspended Van-Packer Chimney installs directly over furnace.

Safe, permanent masonry materials go into the Van-Packer Chimney. Tile liner withstands 2100° F. 7" ID Van-Packer can be used wherever 8" x 12" brick chimney is specified, saves your customers 20-40% over brick.

Easy-to-handle cartons, clearly marked. All parts needed for 10 ft. Van-Packer Chimney shown above. See "Chimneys" in your classified telephone directory for your Van-Packer Jobber, or write Van-Packer Corp.

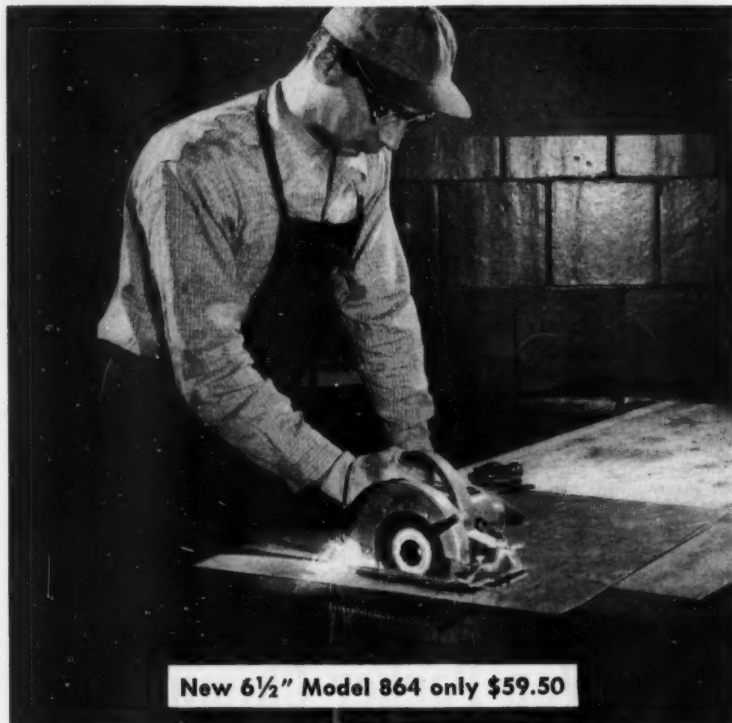
VP Van-Packer PACKAGED MASONRY Chimney

Van-Packer Corporation • Bettendorf, Iowa • Phone DAvenport 5-2621

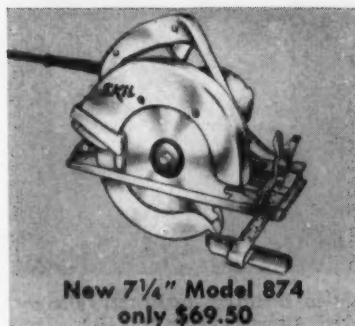
For detailed facts
on Van-Packer Chimneys,
send for Bulletin 11-RS-1 today.



at the lowest prices in history NO SHOP CAN AFFORD TO BE WITHOUT ONE OF THESE 3 RUGGED NEW **SKIL** SAWS



New 6½" Model 864 only \$59.50



New 7¼" Model 874
only \$69.50



New 8¼" Model 884
only \$79.50

	BRIEF SPECIFICATIONS		
Model No.	864	874	884
Blade Diameter	6½"	7¼"	8¼"
Maximum Depth of Cut	2¾"	2¾"	2¾"
Depth Cut at 45°	1¾"	1¾"	2¼"
No-Load Speed	6100 r.p.m.	6000 r.p.m.	5700 r.p.m.
Net Weight	11 lbs.	13½ lbs.	14¾ lbs.

New heavy duty SKIL Saws offer a light weight compact answer to every cutting problem in the shop or on the job.

You'll find one of these SKIL Saws ideal to help you on every one of your heating, air conditioning or sheet metal jobs. This is a real heavy-duty construction tool, yet it's priced so low that it'll pay for itself in no time. Light weight, compact, powerful... use it to cut floor openings, duct entries, all materials including sheet metal, plaster, composition and even concrete.

3 sizes—6½", 7¼", 8¼"—give you the right capacity for every job. New low prices give you big savings. And, all the famous SKIL features assure more profitable operation for you.

Exclusive SKIL features for better performance

- Extreme light weight and the famous SKIL balanced design for easy handling.
- Easy, fast cutting in any position.
- High speed blade.
- Rugged, heavy-duty motor.
- Strong die-cast aluminum motor housing.
- Ball and needle roller bearings throughout.
- Quick-acting depth & bevel adjustment.
- Calibrated rip fence for both right and left hand cuts.
- Safety guard retracting handle for pocket cuts.

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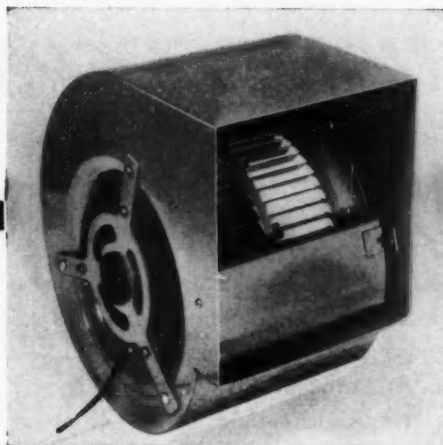
Call your SKIL distributor for a Free on-the-job demonstration and a Free Trial

ORIGINAL EQUIPMENT MANUFACTURERS

are finding two ways of reducing cost of their heating and ventilating units by BUILDING DIRECT DRIVE BLOWERS into their equipment

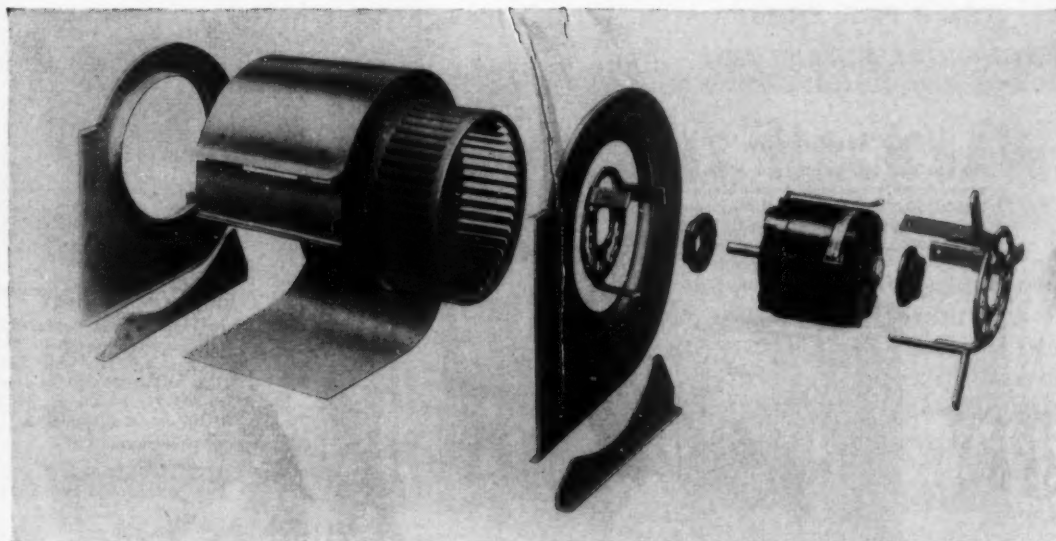
1

First — there is a saving of several dollars in cost of the Direct Drive over Belt Driven blower assemblies.



2

Second — There is a saving of 50% of every blower dollar invested by buying MORRISON parts and building their own assemblies.



DIRECT DRIVE BLOWERS mean — greater efficiency, less space, less vibration, less noise.

Why not investigate this saving possibility . . . write for literature today.

MORRISON PRODUCTS, INC.

16816 WATERLOO ROAD • CLEVELAND, OHIO

High on Efficiency...Low on Cost

RICHMOND BUDGETEERS

**WINTER AIR CONDITIONERS
GAS-AND OIL-FIRED MODELS**

The "Four Budgeteers" offer the utmost in heating efficiency to meet today's demand for economical installations. Green enamel finishes are "Duridized" for maximum protection against rust and corrosion. All are insulated with heavy corrugated asbestos backed with aluminum foil. All feature effective spun glass filters, convenient service access.

**WRITE FOR FREE
TECHNICAL BULLETINS!**

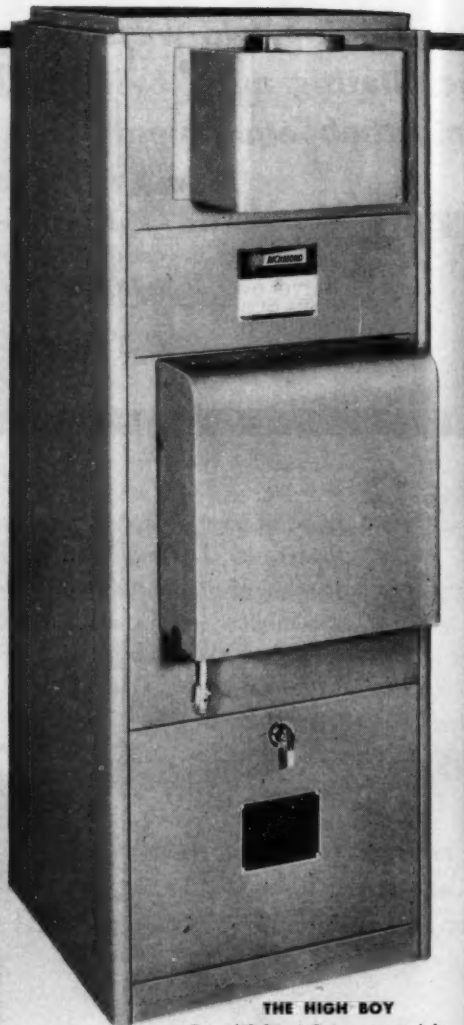
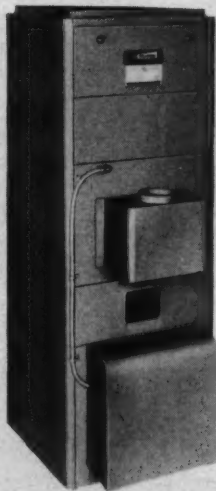
THE COUNTERFLOW

Type CG-46. For slab type homes or any perimeter system. Available with 70,000, 90,000 or 110,000 BTU/Hr. inputs. A.G.A. approved. Type CO-81; 84,000 to 112,000 BTU/Hr. output at bonnet.



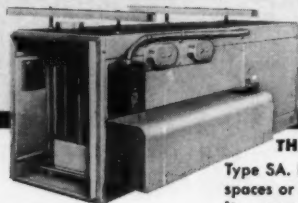
THE LOW BOY

Type LG-16. For full or half basements or split levels, closets or utility rooms. 70,000, 90,000 or 110,000 BTU/Hr. inputs. A.G.A. approved. Type LO-61; 84,000 or 112,000 BTU/Hr. output at bonnet.



THE HIGH BOY

Type VG-36. A.G.A. approved for small spaces such as closets or utility rooms. Available with 70,000, 90,000 or 110,000 BTU/Hr. inputs. Type VO-71; 84,000 or 112,000 BTU/Hr. output at bonnet.



THE HORIZONTAL

Type SA. For attics or crawl spaces or suspension in utility rooms and basements. Available with 60,000, 80,000, 100,000, 120,000 or 140,000 BTU/Hr. inputs. A.G.A. approved.



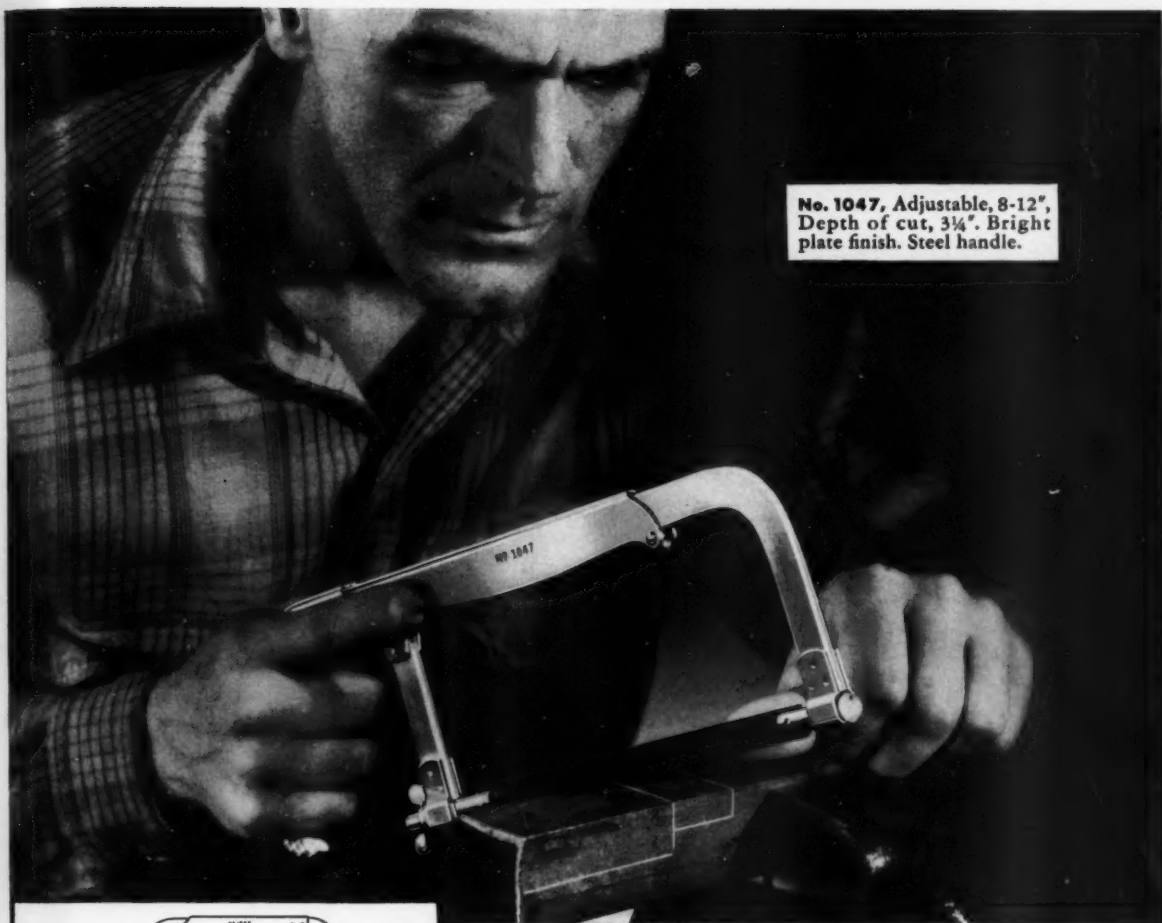
RICHMOND

RADIATOR COMPANY

16 Pearl Street, Metuchen, N. J.

AFFILIATE OF REYNOLDS METALS COMPANY

Look to RICHMOND for a complete line—automatic heating—central summer cooling units.



No. 1047, Adjustable, 8-12".
Depth of cut, $3\frac{1}{4}"$. Bright
plate finish. Steel handle.

No. 1042



Adjustable, 8-12". Depth of cut, $2\frac{1}{2}"$. Bright
plate finish. Wood handle.



No. 1046

Adjustable, 8-12". Depth of cut, $2\frac{1}{2}"$. Bright
plate finish. Steel handle.



No. 1049

Adjustable, 8-12". Depth of cut, $3\frac{1}{4}"$. Bright
plate finish. Neoprene handle.



No. 1044N

Solid frame, 12". Depth of cut, $3\frac{1}{4}"$. Bright
plate finish. Neoprene handle. Also No. 1044
with steel handle.

CRESCENT HACKSAWS

● Strong, rigid, well-balanced Crescent Hacksaws are designed for the exacting mechanic. Choose from five popular patterns having wood, steel or Neoprene handles. The Neoprene handles are far superior to plastic. They are impervious to oil and acid, unaffected by extremes of heat or cold, have high dielectric value and are practically unbreakable. Sold by Industrial Distributors and Hardware Dealers everywhere.

CRESCENT TOOLS

Give Wings to Work

*Sign of the Artisan
Symbol of Excellence*



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by
CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK



When the job calls for Monel Roofing Sheet...

Never pass up quoting on a job simply because you haven't done any Monel® work.

Everybody has to start some time. And there are lots of Monel jobs around! Roofing contractors of all sizes are handling them.

They're profitable jobs, too — like the one Adelard Laberge, Ltd. recently did on the new Marine Storage Building in Quebec City.

With Monel, you don't have to master new fabricating techniques. *Good workmanship in Monel is hardly different from what it is in any roofing metal.*

Sure — you've heard that Monel is strong. And tough. We aren't going to say that it isn't. Strength and toughness are what make Monel such a valuable roofing material. It *lasts*. That's what the architects want. And what the building owners want.

Yes, Monel is strong and tough. But the sheet you work with has a special roofing temper. It's easy to cut. You can form it into intricate shapes —

and even make 180° bends — without cracking it. For neatly soldered joints, you pre-tin the sheets at the shop. And when you are making the installation—use a heavy iron. And keep it hot. *It's as simple as that.*

Get all the facts about Monel now and be prepared to quote on the Monel work that's waiting to be done right in your own locality. *On public buildings . . . schools . . . churches . . . factories . . . even private homes.*

Write us for a free copy of our bulletin, *Basic Application Data — Monel Roofing Sheet*. It gives you just the kind of information you need to do a job you'll be proud of, first try or not. So send for the bulletin today. And use a post card, if that's handier. Just say "Roofers' Bulletin."

The International Nickel Company, Inc.
67 Wall Street New York 5, N. Y.



A lot of roof — and all Monel.

Over 22,000 pounds of Monel went into construction of the batten seam roof, flashings and 60-inch-wide gutters of the new Marine Storage Building on the St. Lawrence River in Quebec City, Quebec. In this corrosive marine atmosphere, the desire for permanent, low-maintenance roofing was an important factor in the choice of Monel. The contractor, Adelard Laberge, Ltd., used Monel cleats and Monel "Anchorfast" nails, too.



Nickel Alloys

Monel Roofing . . . "for the life of the building"



Good things happen when you "sign up" with G.E.

Many a good man is in the middle. He wants to give his family the comforts and as many of the luxuries of life as he can. But not if he has to live, breathe and eat business 24 hours a day to do it.

So of course the heads-up thing to do is find a way to work no harder and *still increase your profit picture*. All right then. Hang that G-E monogram over the door of your shop.

Fact is, the cards are stacked in your favor when you "sign up" with G.E. Folks have complete confidence in the products made by G.E., and confidence in the man who represents G.E. That's why

they're most likely to give him their business...*fast!*

Do a little deck-stacking for yourself. Get with G.E. and watch the good things in life come your way with less effort. Here's a line that includes a unit for *every* home heating and cooling need—a line that is backed up by the famous G-E Warranty (which includes 5 years protection on the sealed-in system of the cooling unit).

There are some territories still open, so deal yourself in by sending the coupon below. We'll rush facts about the great G-E line and the "Franchise with a Future" everybody's talking about. No obligation.

HOME HEATING & COOLING DEPT.

Progress Is Our Most Important Product

GENERAL  ELECTRIC

* Reg. Trade Mark of General Electric Co.

GENERAL ELECTRIC CO.
HOME HEATING & COOLING DEPT. AA-55
BLOOMFIELD, N. J.

Yes, I want the facts on why "signing up" with G.E. will step up my sales and progress.

NAME _____

TYPE OF BUSINESS _____

ADDRESS _____

CITY _____

COUNTY _____

STATE _____

See how
All-Air
High Velocity
units

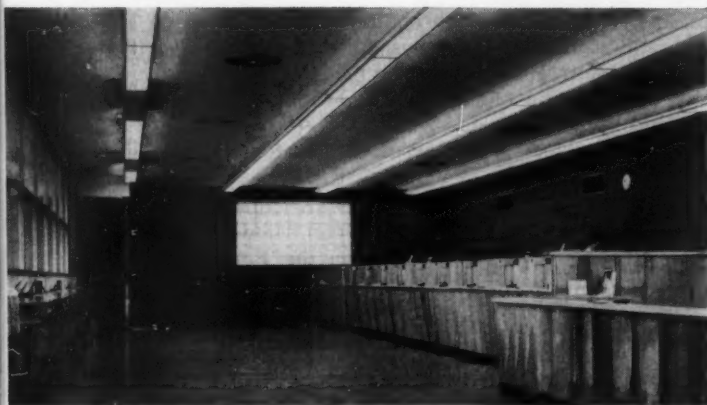
**lower
the roof**

This photograph shows the high velocity ducts installed *through* the open web joists. Note how the Anemostat sound attenuation unit is also placed *inside* the open web joist area. As a result, the architects and engineers were able to save *nearly two feet in a one-story building . . .* also make comparable savings in construction costs.

Completed interior with the Anemostat High Velocity units installed in the ceiling.



The National Bank of Detroit, which is equipped with an Anemostat All-Air High Velocity distribution system.

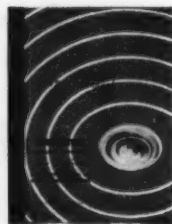


- Architect: W. ROY AKITT
- Engineer: F. A. SANDO
- Mechanical Contractor: JOHN M. CAMPBELL, INC.
- Ventilating Contractor: AUTOTHERM CORP.

• For latest data on All-Air High Velocity units, write on your business letterhead for new Selection Manual 50 to Anemostat Corporation of America, 10 E. 39 Street, New York 16, New York.

Facts about All-Air HV units

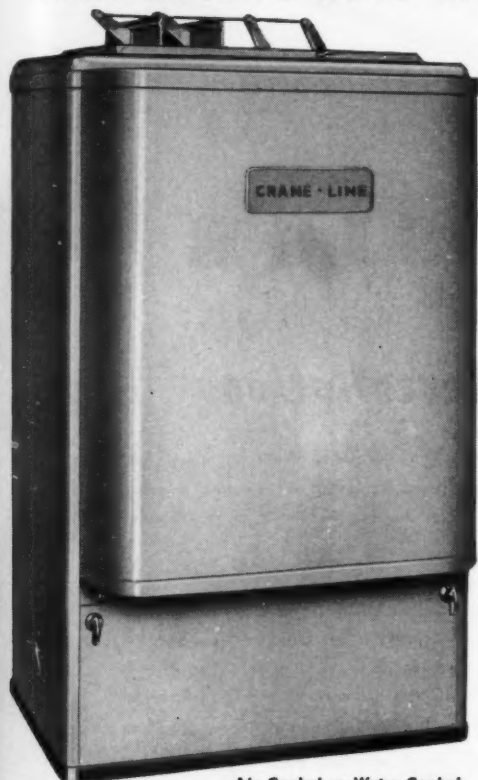
- Can be used with smaller than conventional ducts.
- Can be installed through open web joists (as shown here) and in many other space-saving applications.
- Can be installed faster and with less cost.
- Require no coils, thus eliminate clogging and odors.
- Round, square and straight line diffusers with high velocity units are adaptable to a wide variety of architectural designs.



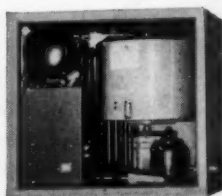
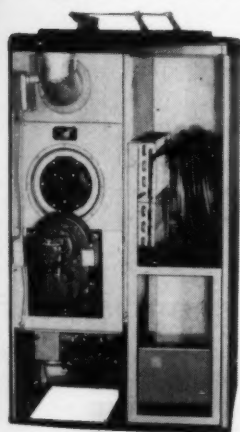
NEWS from CRANE for Heating and Air Conditioning Contractors

A WATERLESS AIR CONDITIONING SYSTEM

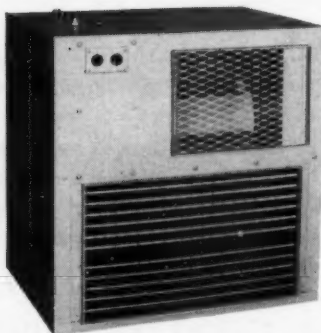
that doesn't have to be custom-built on the site



Air Cooled or Water Cooled, Crane Year 'Round Air Conditioners (including furnace) are handsome units . . . and so compact they fit anywhere.



Note — there are two compressors. One operates almost continually, the other cuts in during peak loads. Results in greater cooling efficiency, lower humidity.



Air Cooled Compressor-Condenser unit goes outside the house (hidden by landscaping), in the garage, even on the roof or in the attic. No noise disturbance because it's not in the house.

Crane's new **AIR COOLED** Year 'Round Air Conditioners have broken through the last two roadblocks to efficient, low-cost air conditioning . . .

First—*no water is used*, so the cost of water and restrictions on its use no longer stand in your way.

And, second—when you use Crane **AIR COOLED** Air Conditioning the system does *NOT* have to be custom-built on the job by a refrigeration serviceman, as in the past.

Installation is quick and easy. No need to dehydrate, charge with refrigerant and purge the system of air. All you do is connect the special Crane valve which automatically punctures the factory seal—and the system is ready to operate.

Crane Air Cooled Year 'Round Air Conditioners are quiet—because condenser and compressor are located *outside* of the house where they can't be heard. And maintenance costs are much lower. Crane **AIR COOLED** air conditioners, like Crane **WATER COOLED** Units, have *two* compressors instead of the usual one, so cooling is more efficient and humidity is kept lower.

Both Crane Air Cooled and Crane Water Cooled units are available in two or three ton sizes, with gas or oil fired furnace. Or they may be had as Add-On units.

Get the details from your Crane Branch or Crane Wholesaler.

**SOON
AVAILABLE!**

Crane **COUNTERFLOW**
Year 'Round Air Con-
ditioner for basement-
less houses using per-
imeter heating.

CRANE

CRANE CO.

836 SOUTH MICHIGAN AVENUE
CHICAGO 5
VALVES • FITTINGS • PIPE
KITCHENS • PLUMBING • HEATING

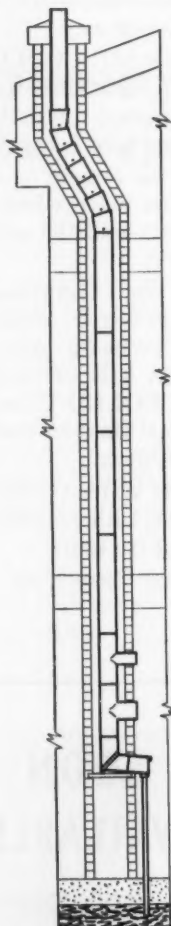
Stainless Steel

CHIMNEY LINERS

by

EXCELSIOR

for Gas Heat Installations



The Excelsior Chimney Liner Pipe and Fittings are made of 26-gauge, type 302 nickel-bearing stainless steel. They are designed for lining old and new masonry chimneys in gas-heat installations. They offer durable protection of the chimney from the gases and acid condensate.

The Excelsior line of Chimney Liner Pipe and Fittings is complete to meet any installation requirements in either straight or offset chimneys. Pipe Sections are 36" long with standard lock and are available in all standard sizes from 3" to 12" inclusive. The large end is punched for sheet-metal screws. The Pipe is supplied nested, but when our trucks make the delivery, they may be ordered in made-up form. There is no extra charge for grooving or making up the pipe.

Four-piece Adjustable Elbows come in all standard sizes from 3" to 12" inclusive. Long-End Adjustable Elbows are available in 6" and 7" sizes. The 84°, Soldered Elbow is made in the 6" size only. Snake Sections for chimney offsets are 48" long and made up of seven pieces for easy installation. They are available in 5", 6", 7", 8", and 9" sizes. Tees and Reducers are available in all standard sizes to meet any piping requirement. The drain has an easily removable cap for cleaning and inspection.

When the chimney is lined with other than 6" pipe, a suitable reducer is used to increase or reduce to 6" so that the 6" Elbow and Drain can be installed at the base of the chimney. The outlet on the drain accommodates a plastic tube which runs down through the floor into the ground to dispose of the condensation from the chimney.

Write for Full Particulars and Prices

THE EXCELSIOR STEEL FURNACE COMPANY



118 S. CLINTON ST.

EXCELSIOR HEATER & SUPPLY DIV.
The Excelsior Steel Furnace Company
879 Hersey Ave., St. Paul 4, Minn.
Telephone: NEstor 7255

Phone: FRanklin 2-8120

BREX DIV.
The Excelsior Steel Furnace Company
One Industrial Rd., Wood Ridge, N. J.
Telephone: WEbster 9-2020

CHICAGO 6, ILL.

EXCELSIOR HEATING SUPPLY DIV.
The Excelsior Steel Furnace Company
2 East 3rd St., Kansas City 5, Mo.
Telephone: VICTor 3715



Another good reason why you'll do better with Thatcher!

All prospects want the feeling of positive protection for their heating investment. They'll buy faster and more confidently from *you*, when you offer the plus values of Thatcher equipment . . . backed by Thatcher's 10-Year Guarantee. It's one of the many sales features that continue to give Thatcher wholesalers and dealers that extra edge on competition.

Why not make your sales job easier . . . with Thatcher. Get the full story today by writing Thatcher Furnace Company, Garwood, N. J.

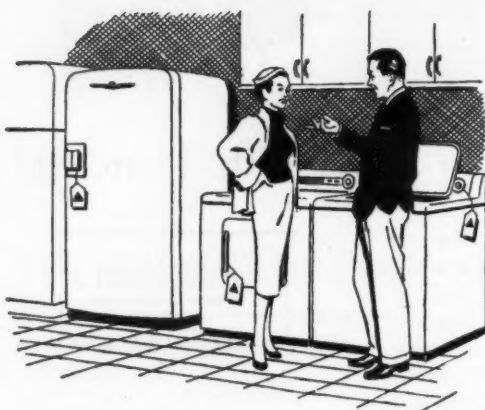
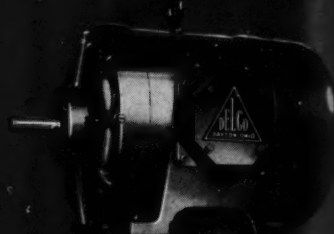
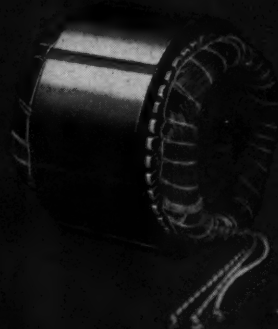


*The Oldest Name in
Indoor Comfort*



*Delco engineers
to give you*

DELCO



"The lady who is wise will ask to be advised
if it's powered with a Delco Electric Motor."

"Job-fitted" Delco Electric Motor performance
for your product begins on *your* drawing board.
Mechanical fitness and correct electrical adap-
tation are proved in *your* laboratory.

Through each step from design to production,
Delco engineers work with your engineers to
make *sure* every Delco Electric Motor exactly



See Delco Electric Motor advertising in *The Saturday
Evening Post* and *Better Farming* for the full Delco story.

work with your engineers

"Job-Fitted" Electric Motors



fits your own application and requirements. And for on-time delivery of motors—in any quantity, wherever you want them—you can depend on Delco.

That's why Delco Electric Motors power more nationally famous appliances than any other make—why it's "Delco Preferred" in industry.

From small fractionals to giant integrals, there are Delco Electric Motors to fit your products and meet your industrial needs. Every one is built to rigid standards of quality, and subjected to rigorous tests throughout production.

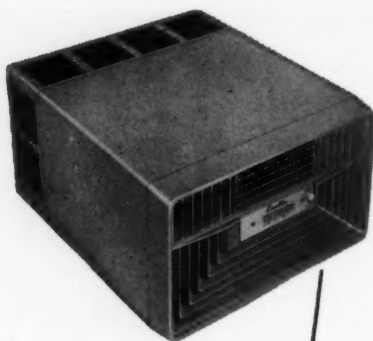
Delco Electric Motor parts and service are available to your customers everywhere.



DELCO *Electric* MOTORS

DELCO PRODUCTS, DIVISION OF GENERAL MOTORS, DAYTON, OHIO

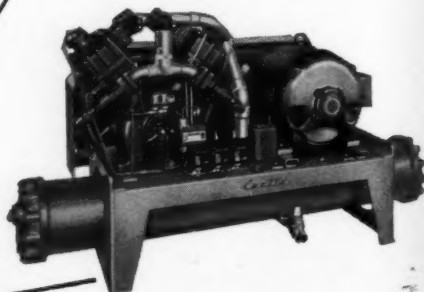
Proved best by Performance!



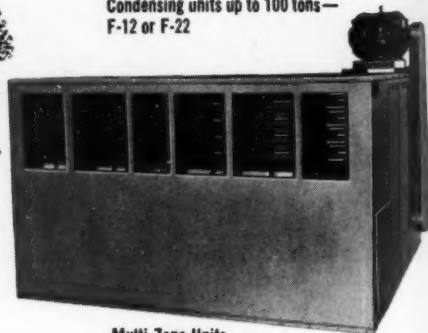
Window Air Conditioners



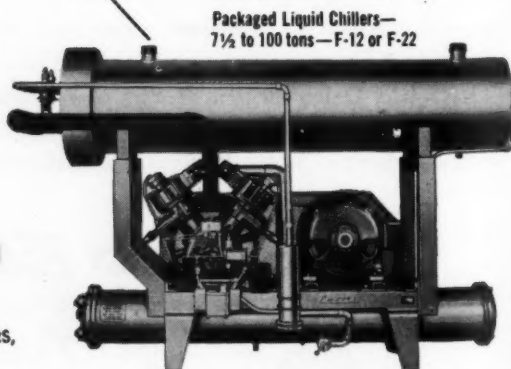
Packaged Air Conditioning units—2 to 20 tons



Condensing units up to 100 tons—F-12 or F-22



Multi-Zone Units—serving 2 to 8 zones



Packaged Liquid Chillers—7½ to 100 tons—F-12 or F-22

**More jobs...
More profit!**

WITH THIS

**complete
Curtis
LINE**

You'll sell more jobs, and make more profit, with this well-rounded Curtis line. Curtis equipment sells readily because it is backed by one of the oldest and most respected names in the business. Curtis products are presold for you by hard-hitting national advertising in *Saturday Evening Post*, *Time* and *Newsweek*, plus many national business and trade magazines.

WRITE TODAY for information on how you can obtain a Curtis direct factory franchise.

Curtis REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1982 Kienlen Avenue, St. Louis 20, Missouri

Other Curtis Products: INDUSTRIAL AND AUTOMOTIVE AIR COMPRESSORS, AUTO LIFTS, CAR WASHERS, AIR HOISTS

This coating will take anything the base metal will



WHEELING SOFTITE[®] COP-R-LOY[®] GALVANIZED SHEETS



Wheeling also manufactures a complete line of Galvanized Furnace Pipe, snap lock or closed seam Perimeter Heating or Air Conditioning Pipe, Style K Gutters, Square Conductor Pipe, Flashing, Valleys, and Fittings.

*Galvanized steel does it better...
SOFTITE does it best!*

Bead it, crimp it, fold it . . . put it through any fabricating process . . . the coating on softTITE Galvanized Sheets won't chip, crack or flake. That's because softTITE is ductile and tight coated to an amazing degree, the tightest coating produced!

What's more softTITE keeps its bright look, makes jobs look better, easier to please customers.

Put softTITE to any test. See for yourself why the demand for softTITE has forced Wheeling to triple its production facilities in 1955. Try softTITE once and you'll see why actual users call Wheeling softTITE the best galvanized sheet yet produced.

For details call the nearest Wheeling warehouse or office.

WHEELING CORRUGATING COMPANY, WHEELING, WEST VIRGINIA

For your convenience, warehouse stock immediately available at these locations: Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston.



Presents The GREATEST of PERIMETER DIFFUSION REGISTERS

The New No. 1000 U.S. Super-Base Diffuser

The No. 105 U.S. Sidewall Diffuzair

The No. 106 U.S. Base (Out-of-Wall) Diffuzair

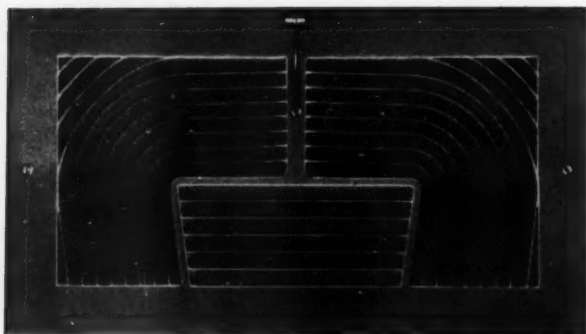


New No. 1000 U.S. Super-Base Diffuser

That SUPER-LINE that LEADS ALL and Made the World Sit-Up and Take Notice. New Setlock Balancer — INCREASED FREE AREA — Reduced Resistance, place the No. 1000 Way Ahead of all Base Diffusers.

Saves Labor — Eliminates Pipe Dampers — Can be installed in old houses or at any stage of new construction — against Studs, against Lath, against plastered walls or against Base-board.

THE MOST VERSATILE—THE BEST APPEARING—THE MOST DESIRABLE OF ALL DIFFUSERS



The No. 105 U.S. Sidewall Diffuzair

The WONDER-LINE that spreads the Airflow at a full 180° "SUNBURST" DIFFUSION — with an equal F.P.M. at every degree of Air Diffusion — A STEADY SEMI-CIRCULAR PATTERN of EVEN AIR-SPREAD Not accomplished by any other Register — An Astounding achievement.

The No. 106 U.S. Base (Out-of-wall) Diffuzair

CREATES the Same Performance in an Out-of-Wall Setting. LOWEST RESISTANCE — MOST ATTRACTIVE — GREATEST DIFFUZAIR LINE ON EARTH. 12 x 6 Size is now Ready For Shipment — 10 x 6 and 14 x 6 Sizes Will Follow Soon.

ASK YOUR JOBBER TO SUPPLY THE NO. 1000 — NO. 105
AND 106 LINES. WRITE FOR CATALOG NO. 55-6.



UNITED STATES REGISTER COMPANY

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

SOLD BY LEADING JOBBERS FROM COAST TO COAST

A SMALL **BASO**[®] VALVE

with *big-valve features*



● The Type 843 Baso Valve provides safe lighting, complete shut-off of gas, and built-in plug valve for all small gas appliances with capacity of 60,000 Btu./hr. or less: Wall Heaters • Room Heaters • Deep Fat Fryers • Coffee Urns • Griddles

In an overall length of less than 3¾", this straight-through Baso valve offers plug valve control of main burner and pilot burner gas, safe lighting, and complete shut-off of all gas if the pilot burner should be extinguished. Its small, compact size brings all the control features of its larger brothers to the small capacity appliance where limited space may be a controlling factor in the selection of an automatic pilot valve.

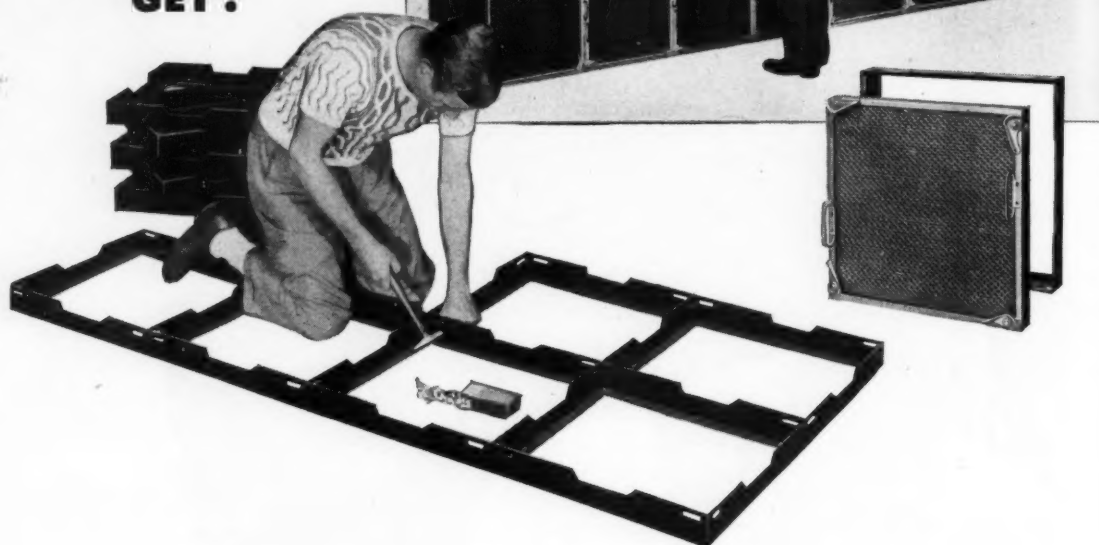
The cocky, red plastic handle turns through only 180° from the Pilot to the Off position. The multiple cross drilling of the plug valve control both main and pilot burner gas. Resetting of the valve can be accomplished only when the handle is at the Pilot position and when gas can reach only the pilot burner. A built-in pilot adjustment feature allows quick and easy adjustment of pilot burner gas. Inlet and outlet are ⅜" female pipe threads and pilot opening ¼" compression coupling. The electromagnet hood and reset assembly is replaceable in the field.

The price? Just what you're looking for—small, like the valve. Write...

MILWAUKEE GAS SPECIALTY CO., Dept. AA-5, Milwaukee 1, Wis.

HOW SIMPLE

CAN AIR FILTER INSTALLATION GET?



A Hammer and a Dolly Are The Only Tools You Need To Install a Bank of AAF High Velocity HV UNITS!

JUST lay unit frames on a level surface, line up tiers and rivet together. Then fit bank to opening, lock filters in place and you're in business! Space-saving "V" arrangements can be installed just as simply, riveting frames to angle uprights.

Ease of installation is just *part* of the HV story. $4\frac{1}{2}$ miles of woven wire media in exclu-

sive pyramid pocket design means greater cleaning efficiency per unit. Two HV's will do the work of three standard units—saving you space *and dollars!*

AAF HV filters, in standard sizes, are available for immediate delivery. Get complete product information from your local AAF representative or write direct for Bulletin No. 203.



American Air Filter

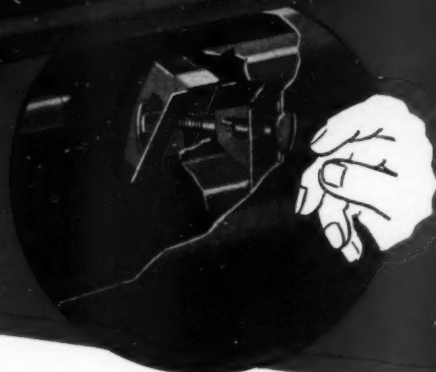
COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 355 Central Avenue, Louisville 8, Kentucky

*another Lima first
...and at
no extra cost*



Lima SERIES 70
**Perimeter Extended
Baseboard Diffuser**
now features

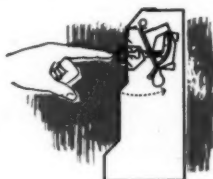


built-in

AUTOMATIC PUSHBUTTON Damper Control

PUSH IN

it automatically
opens and locks
into pre-balanced
position.



Again Lima is first . . . providing fingertip control of air in heating and cooling. This exclusive new Lima feature assures split second air shut-off whenever desired. The hinged damper runs full length of louver openings and snaps tightly closed with double spring action.



PUSH UP

it automatically
snaps closed
for positive
air shut-off.

It is ideal for cooling — the positive spring tension eliminates rattling and keeps valve from being forced closed by the air velocity. Give your customers this modern convenience at no extra cost. Lima 2-foot and 4-foot sizes are now being shipped completely assembled — including the built-in mechanical damper and this new push-button control mechanism.

EASY TO BALANCE

In either open or closed position simply turn pushbutton adjusting screw with fingers to correct valve setting for proper balance.

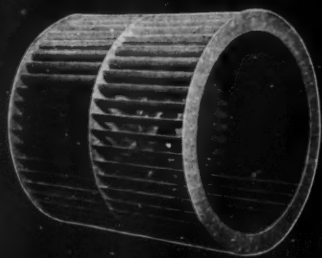
This identical unit may also be ordered without damper, as Series 75

Lima

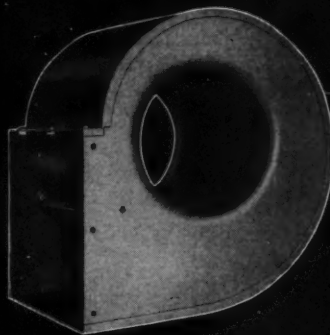
REGISTER COMPANY, LIMA, OHIO

Sold exclusively through heating wholesalers and manufacturers.

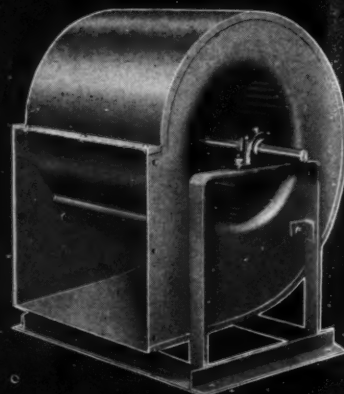




FAN
WHEELS



FAN
HOUSINGS



COMPLETE FANS

Clarage "air power" gives your equipment

GREATER SALES POWER

Increased saleability — you get it when you install Clarage equipment in your air conditioning units, evaporative condensers, cooling towers, circulators, etc. The experience of leading manufacturers backs that up!

All down the line — from the unit manufacturer, to the installer, to the user — you'll find Clarage equipment **PREFERRED** because of its ability to provide full rated performance and trouble-free operation under the most exacting requirements. Construction throughout is heavier than that of ordinary furnace blowers.

Wheels, housings, or complete fans are available in 11 standard sizes with capacities from 200 to 10,000 cfm. Special features and constructions can be furnished for unusually high pressures or extremely severe service conditions.

To obtain full information, including dimensions and capacity ratings, request Catalog 603-A . . . or call in our nearest sales engineer.
CLARAGE FAN COMPANY, Kalamazoo, Michigan.

You can Rely on

CLARAGE

...dependable equipment for
making air your servant

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal



Looking Ahead?

LOOK TO

Airline

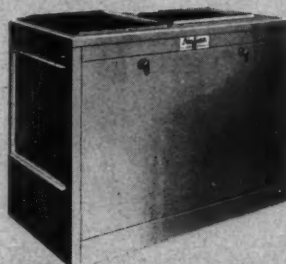
NORGE HEAT

HEATING and AIR CONDITIONING

Now—*right now*—is the time to decide where you're going in heating and air conditioning. If you're looking ahead—planning big—then look to Ingersoll's Airline for everything you need.

Yes—*everything you need!* Gas and oil fired forced air furnaces. Conversion burners. Waterless and water cooled air conditioners. Gas and electric water heaters. Incinerators. All with advanced engineering features, smart styling, top performance. All designed for easy, low-cost, high-profit installation. All priced to get business for you. And all available for shipment *right now!*

Think it over. Isn't it worth getting all the facts? Hustle that coupon to us—now! You'll be glad you did!



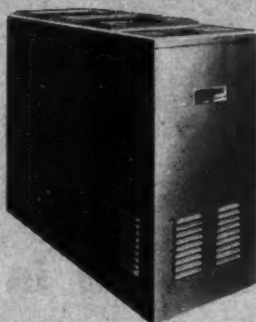
ALL NEW! SUMMER AIR CONDITIONERS

Both air cooled and water cooled models, including remote units. Compact 2, 3 and 5-ton sizes.



ALL NEW! GAS FIRED FURNACES

Hi-Boy, Lo-Boy, Counterflow and Horizontal units from 70,000 to 200,000 Btu input. High efficiency sectional heat exchanger. Built-in draft diverter. Enclosed controls.



ALL NEW! OIL FIRED FURNACES

Exceptionally compact Hi-Boy, Lo-Boy, Counterflow and Suspended models. Sizes from 80,000 to 165,000 Btu output at bonnet. Outstanding heat exchanger assembly, factory installed.



PRODUCTS OF BORG-WARNER

Airline Heating and Air Conditioning equipment is manufactured by Ingersoll Conditioned Air Division of Borg-Warner Corporation. The engineering skills and production facilities of these organizations assure you fine quality and dependable performance.



INGERSOLL CONDITIONED AIR DIVISION

Borg-Warner Corporation
Dept. AA 760 E. Vine St., Kalamazoo, Mich.

Rush Airline details for:

- ☐ Franchise Distributor
- ☐ Dealer
- ☐ Have your representative call on us

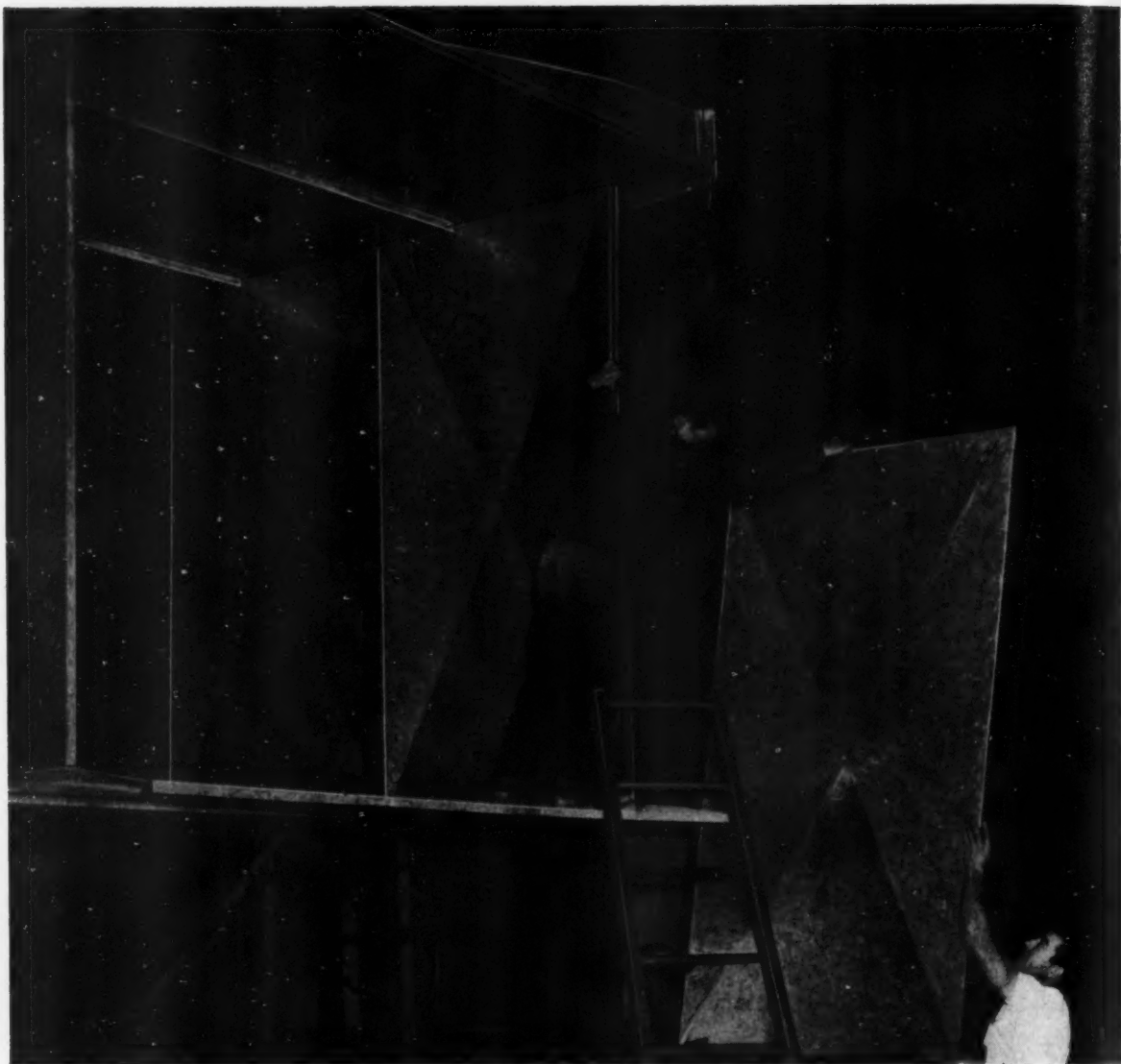
Name _____

Company _____

Address _____

City _____

State _____



Spokane Coliseum is air-conditioned through Bethcon ducts

Opened last autumn, the \$2½ million Spokane Coliseum is the largest civic auditorium in the Northwest. Its huge interior will serve 3000 banqueters, or seat 8500 boxing fans . . . in air-conditioned comfort the whole year around.

Carrying conditioned air from plant to public required some 60 tons of ductwork, fabricated of Bethcon galvanized sheet steel by Fox-Smith Sheet Metal Works of Spokane. Bethcon sheets are galvanized in Bethlehem's

continuous hot-dip line, and they have a uniform, tight zinc coating that is a delight to the eye. And Bethcon spangles tend to hold their lustre longer. Many sheet-metal men say that Bethcon is superior to any they have ever used in severe drawing or forming operations.

Try Bethcon on the next tough job that comes into your shop. It is made from high-quality cold-rolled open-

hearth steel, both plain and copper-bearing. You can get it in gages 18 and lighter, in sheets up to 48 in. wide. For further details, just call our nearest sales office, or drop us a line direct.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



BETHLEHEM STEEL

JOHN WOOD Automatic GAS water heaters COST LESS TO OPERATE AND YOU CAN PROVE IT!

It's SAVINGS that make sales

It's here—ready to work for you! JOHN WOOD has a water heater story that's a natural for sales! BY ACTUAL TEST, John Wood Water Heaters cost your customers less per gallon for hot water...make savings no other construction can match! That's because the OFF-CENTER flue construction—developed and featured by JOHN WOOD—beats every known water heater construction for economy in test after test.

That one fact gives you a real edge on all your competitors. Nobody has an economy story like yours when you feature JOHN WOOD. Nobody has the profit chances you get with the proved JOHN WOOD economy story!

Here's potent sales material—backed up by the hardest hitting program of promotion and advertising yet—all working for you and your bigger profits.

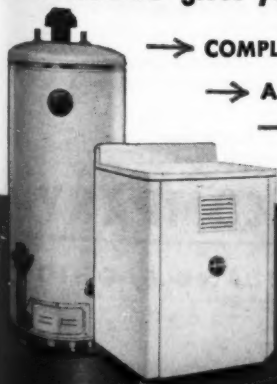
Ask your JOHN WOOD wholesaler for the full story.

Write for FREE Book "How Do You Judge a Water Heater"—Today!

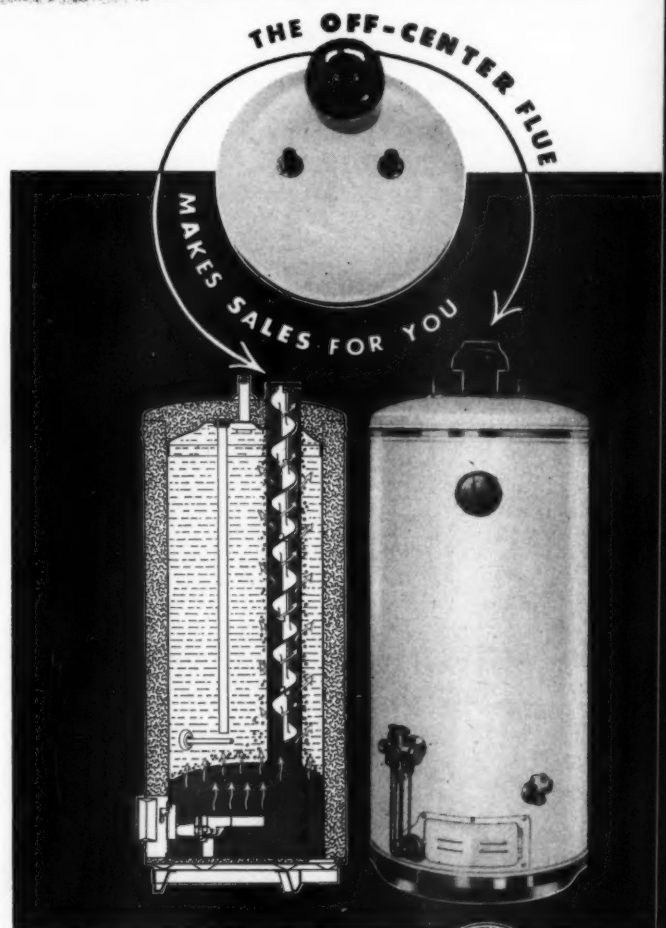
**BEATS the rest
by EVERY test**

JOHN WOOD gives you more to build sales—

- COMPLETE LINE of sizes and styles, vertical and table top models
- A PRICE FOR EVERY BUDGET
- THE ONLY WATER HEATER OFFICIALLY SELECTED BY Mrs. America
- FULL PROMOTIONAL HELPS to build your sales



Finest glass-lined
or galvanized
water heater anywhere!



JOHN WOOD COMPANY

HEATER AND TANK DIVISION
Conshohocken, Pennsylvania and Chicago, Illinois

Auer

REGISTERS and GRILLES

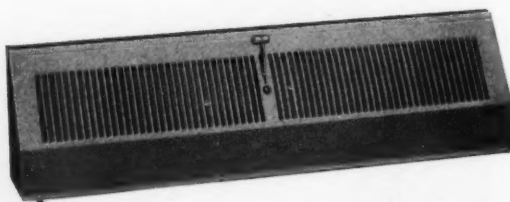
Fill Every Heating and Air-Conditioning need

You'll find the answer to all your commercial and domestic register problems in Auer's complete line of registers and grilles. Available for quick delivery in a wide variety of standard styles and sizes to fill the most exacting specifications.

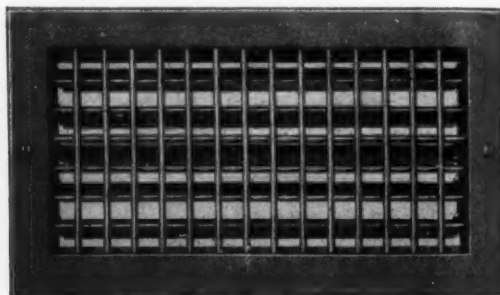
Auer registers and grilles are engineered and built to high standards of uniform quality and

accuracy to assure ease of installation with a minimum of on-the-job time loss. They are decorator-designed to enhance both modern and traditional decor while providing the utmost in air-flow efficiency.

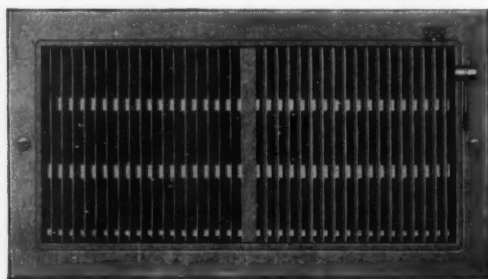
Shown here are a few of the items featured in Auer's "complete-for-every-need" line.



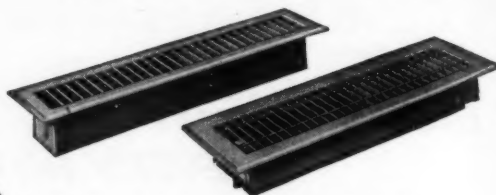
"Perfusaire"—the 18 inch perimeter diffuser that has the capacity of 4 to 8 foot units for heating or air conditioning systems.



The Auer Streamliner series—designed for quiet operation with high velocity air conditioning systems—available with single banks of adjustable bars, vertical or horizontal, also with a double bank, vertical in front and horizontal in back (or the reverse).



No. 4432—Airo-Flex Wall Register—multi-louvers are adjustable to direct air—upward, straight or downward—flexible vertical fins provide right or left deflection for fine way control.



Auer DRP Floor Perimeter Registers are available in 2 1/4 x 14 inches and widths of 4 and 6 inches and in lengths from 10 to 14 inches. Features built-in adjustable damper—attractive appearance and provides large fan-shaped air circulation pattern.

In addition to these items, the Auer line includes ornamental perforated grilles, available in cold rolled or stainless steel, bronze, brass, and aluminum.

Write for complete descriptive literature on Auer's complete line of "Registers and Grilles for Every Need".

Auer
REGISTERS
and GRILLES

THE AUER REGISTER COMPANY

6602 CLEMENT AVENUE • CLEVELAND 5, OHIO



Little forming is needed—no welding or finishing is necessary in this simplified construction stainless sink top. Use of flat, polished stainless sheets to cover plywood tops, and stainless molding, makes a pleasing, economical job. Construction is similar to that of the kitchen equipment shown here. You can buy drawn sink bowls and molding from manufacturers. Armco Stainless Steel sheets for work surfaces are available from your Armco Distributor.

How to cash in on kitchen remodeling

Demand for custom-built stainless steel kitchen equipment in new and remodeled homes is growing. You can cash in on this trend by arranging to supply custom stainless parts to your local kitchen remodelers.

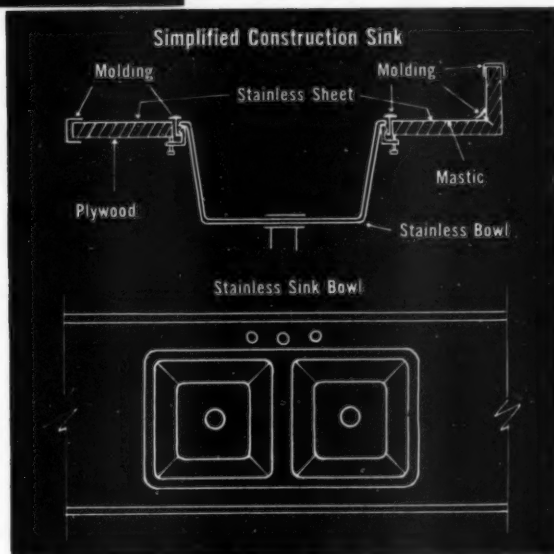
One reason for the swing to stainless is **price**. New, simple construction methods bring the cost of stainless equipment down to the level of other commonly used materials.

You can make extra profits with many kinds of custom-built stainless work for the home—kitchen and laundry work surfaces, range hoods and kitchen cabinets, door kick and push plates, and roof drainage systems.

Remember, you can recommend Armco Stainless Steel with confidence. It stays beautiful, resists denting and scratching, and is easy to keep clean.

Tell your local kitchen remodelers how you can team up with them on their jobs. And check with your Armco Distributor about the many architectural applications of Armco Stainless. He'll see that you get stainless steel when you need it.

Just fill in and mail the coupon for complete information.



ARMCO STEEL CORPORATION

1225 CURTIS STREET,
MIDDLETOWN, OHIO

- ☐ Send me names of manufacturers of stainless sink bowls and molding
☐ Send me name of my nearest Armco Distributor

NAME _____

COMPANY _____

STREET _____

CITY _____

ZONE _____ STATE _____



ARMCO STEEL CORPORATION

1225 CURTIS ST., MIDDLETOWN, OHIO

SPECIAL STEELS

SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • ARMCO INTERNATIONAL CORPORATION



FAMOUS LAST WORDS:

“they wouldn't dare”

That's what they said the day before Pearl Harbor. Remember? But by now you'd think people would have learned. Let's face it—we must be ready for disaster at any moment. It may be an atom bomb—or it may be a fire, a flood, a hurricane. It's only common sense to be prepared for it, whatever it is. Take these precautions **TODAY**:

- ☐ **Enlist the help** of your local Civil Defense Director.
- ☐ **Check contents** and locations of first-aid kits.
- ☐ **Send staff** to Red Cross courses. They may save your life.
- ☐ **Promote preparedness** in your community. Your local CD Director can show you how.

*Set the standard of preparedness in your plant city—check off these four simple points **NOW**.*



You're In Good Company



WHEN YOU GET

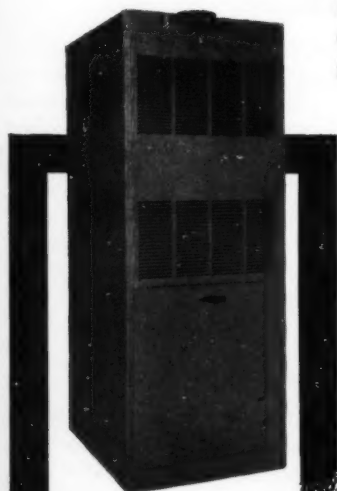
COZY

GAS-FIRED FURNACES

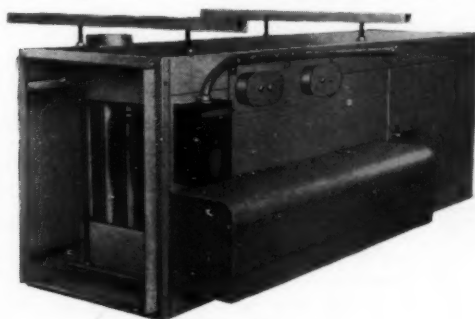
Not only in good company . . . but with the best. For over a quarter of a century the manufacturers of COZY gas-fired furnaces have taken pride in producing quality equipment, at a price that is right, for customer satisfaction. They have also established a pleasant manufacturer, distributor, dealer policy that is fair to all concerned. That's why COZY continues to grow in popularity . . . and that's why you should be, if you're not already, telling your customers to get COZY for cold weather comfort.



The Cozy Challenger . . . the best buy in floor furnaces . . . has accessible controls.



Cozy Models 200-140 Upflow and 201-140 Counterflow, with 140,000 BTU input capacities. Also available in 105,000 and 75,000 BTU capacities. Equipped with exclusive Curvic Heat Wringer.



Cozy Horizontal Forced Air Furnace available in five capacities, 60,000 BTU to 140,000 BTU. Easy installation in attic, utility room, under floor, even without basement.



Cozy Wall Heaters available in four capacities and for single- or dual-installation with three types of temperature controls.

ASK ABOUT OUR HIGH-PROFIT, YEAR-AROUND SALES PLAN

COZY

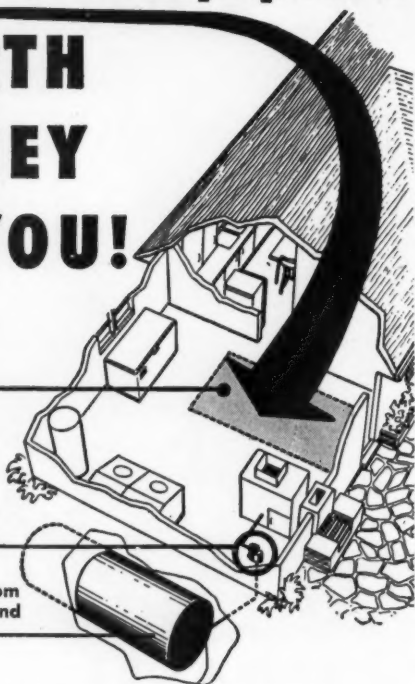
The ADVANCE FURNACE CO.
WICHITA, KANSAS

This extra utility space is WORTH MONEY TO YOU!

There's more
space here

... because
OILIFTER is
installed here

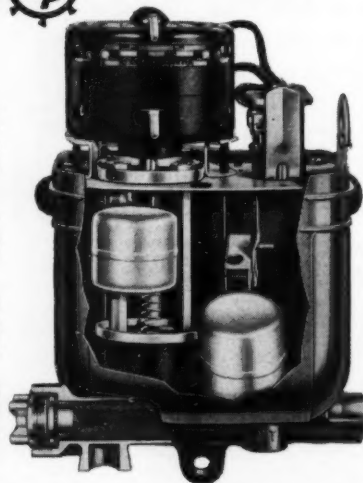
... to pump from
this underground
tank



Tell your customers
about  OILIFTER

Quick facts on big features:

- **POSITIVE PROTECTION AGAINST OVERFLOW** — safety float maintains normal, economical operating level
- **100% SAFE** — automatic cut-off switch stops operation if tank becomes dry.
- **TROUBLE-FREE** — 100 mesh strainer positively stops dirt and impurities in oil.
- **EASY TO INSTALL** — 3 screws to mount, only one 1/4" copper tube.



OILIFTER makes a big hit with customers — creates valuable space *inside* because oil tank goes *outside* — underground. It automatically lifts oil from tank to heater as much as 25 feet away! Customer starts Oilifter at the beginning of the season . . . no further attention is required. Operates silently, no radio or TV interference. *One more A-P profit package for you!* Order from your distributor, or write:

A-P CONTROLS CORPORATION

2452 N. 32nd Street, MILWAUKEE 45, Wis.
COOKSVILLE, Ontario NIJMEGEN, Holland
For Export: 13 E. 40th Street, New York, N. Y., U.S.A.

equipment developments (From page 52)

Pak" blowers together. Hardware and housing supports for installing custom equipment are furnished by the company. Five standard pulley combinations are available, providing speed range from 385 rpm to 888 rpm per blower.

Combination Heating-Cooling Unit

MODELS RG AND RO year 'round air conditioners combining a surface type heat exchanger and a removable cooling package — Air Conditioning Div., Westinghouse Electric Corp., Dept. T-079, P.O. Box 510, Staunton, Va. Conditioner is available in 2 ton cooling



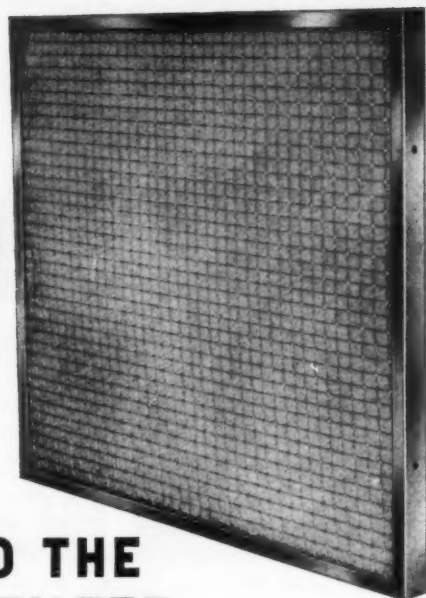
capacity with a choice of either gas (72,000 Btuh) or oil (84,000 Btuh) heating. Either heating unit may be installed without the cooling unit which can be added later. Combination unit requires 6 1/2 sq ft floor space. Upper section consists of gas or oil fired burner and heat exchanger; lower third is a 2 ton air conditioner which can be rolled out by removing the front panel and disconnecting service lines. Wall mounted thermostat was designed to provide complete automatic control.

Hand Operated Bench Shear

STEEL SLITTING shear with main frame of steel casting — W. A. Whitney Mfg. Co., 636 Race St., Rockford, Ill. "Chicago Steel Slitting Shear" is a portable bench shear, formerly manufactured with a plate frame by Dreis & Krump Mfg. Co., with capacity of 3/16 X 2 in. bars or 10 gage sheets. The new model will use the steel casting frame for greater strength and better alignment between the cutting edges of the upper and lower blades, the manufacturer states.

Recessed Wall Heater

AUTOMATIC GAS vented recessed wall heater said to provide uniform warmth because it heats by strong circulation of warm air and by heat radiated from big



SUCCESSOR TO THE THROW-AWAY FILTER

for ★ WARM AIR FURNACES
★ AIR CONDITIONERS
★ AIR HANDLING UNITS

WILL INCREASE YOUR TURNOVER, PROFIT

Greater sale price of this permanent-type filter—and its attractive mark-up—will put money in your pockets.

Efficient new plastic dry-type media traps dirt by accumulated static charge. Quickly and easily rinsed clean with cold running water—and immediately ready to be re-used, good as new. Sturdy aluminum frame. All standard sizes.

National advertising and promotion supports your sales. Contact your Continental representative, or write direct, for the profitable details.

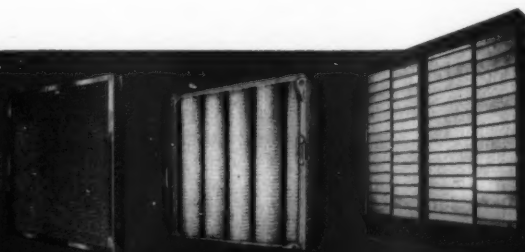


P. O. BOX 1647

LOUISVILLE 1, KY.

CONTINENTAL

AIR FILTERS Inc.



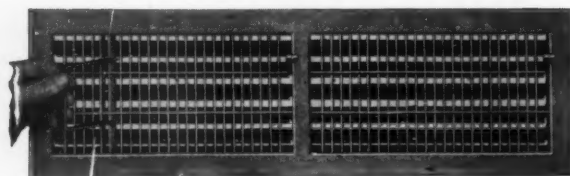
You can get
DIRECTED AIR FLOW
at any angle with



321-A HMV

Rear View Showing "HNV" Valves

**Every grille bar adjustable
individually—before or after
installation**



321-A HMV Tandem

Any direction of air flow—right, left, up, down and any combination—is easily obtained with "Fabrikated" Style No. 321-A HMV air conditioning registers, for residence or commercial installations, on sidewalls or ceiling. The face bars are adjustable to right or left; valves on the back are adjustable to direct the air flow up or down; valves may also be fully closed, and are connected to open or close in unison.

The angles of deflection and the combinations to be had are practically unlimited. Adjustments for directed air flow may be made before or after installation. Grille bars are held firmly in place and will not vibrate or rattle.

"Fabrikated" registers are available in sizes from 8 x 4" to 48 x 24", including tandem style. Special sizes can be made without special die set-up charges.

Write for Catalog No. 54.

Always Leading—Always Progressing



**THE INDEPENDENT
REGISTER CO.**

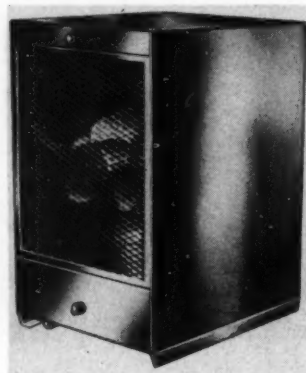
3747 E. 93rd STREET • CLEVELAND, OHIO

equipment developments (Continued)

center grille — General Gas Light Co., 202 N. Park St., Kalamazoo 11F, Mich. "Humphrey" model features "Corr-I-Tube" radiator, heavy gage steel combustion chamber with cast iron base plate, built in draft diverter, stainless steel windproof pilot and universal cast iron burner which operates on all gases. Special feature is low radiation of heat to wall.

Residential Cooling Tower

"WATER-MASTER" cooling tower in 3, 5, 8 and 10 ton capacities — Lilie-Hoffmann Cooling Towers, Inc., 1450 S. Vandevanter Ave., St. Louis 10, Mo. Internal steel parts are coated with special mastic, possessing sound deadening and rust proofing qualities, accord-



ing to the company. Towers have overflow and adjustable float valve, air inlet screens and top distribution pan cover. Filling, eliminators and louvers are of redwood. Pan at top of tower receives water from inlet and distributes it over filling through evenly spaced orifices. Towers have multi-bladed, deep pitched low speed fans; pump motor has stainless steel shaft with drip-proof canopy, automatic thermal overload and sealed ball bearings.

Gas and Oil Counterflow Furnaces

TYPES 118 (gas) and 218 (oil) counterflow furnaces in highboy, lowboy and horizontal models — Mueller Climatrol, 2005 W. Oklahoma Ave., Milwaukee 15, Wis. Type 118 is designed for slab or crawl space perimeter system installations; oil unit is converted to gas by means of a special gas package. Both oil and gas units are 65½ in. high, 25½ in. wide and 26¼ in. deep, plus the burners. Both models are in 100,000 Btu size. Flue outlet and burner are at the front of the unit to simplify installation to chimney and minimize occupied floor space. Standard equipment includes large centrifugal blower with permanently lubricated sealed ball bearings; built-in filter rack; pre-wiring; continuous duty single speed, overload protected motor; and upper and lower fan switch and

The security of

Quality




The man who depends on his heating dealer's judgment is in good hands. His home will enjoy the security of quality — its safety, economy, dependability. A record of more than 15,000,000 Field Draft Control installations stands as proof of your unwavering loyalty to quality.




FIELD CONTROL DIVISION

of H. D. CONKEY & COMPANY, Mendota, Illinois


Affiliates: (Conco Building Products, Inc. • Brick, Tile, Stone
(Conco Materials Handling Division • Cranes, Hoists



FIELD TYPE "M", domestic, commercial, and industrial models for oil and coal fired heating plants. Sizes 6" through 32".



FIELD TYPE "MG", double acting models for commercial and industrial gas fired heating plants. Sizes 8" through 32".



FIELD TYPE "RC", for domestic oil and coal fired heating plants. Sizes 7" and 9" for 6" through 10" flues.

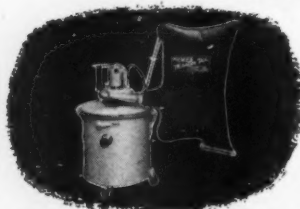
now! new SPIC-SPAN

latest, low cost furnace, air
conditioning and boiler cleaner

Here's *one* example of what Premier's new Spic-Span gives you: 3 times more filtering area in standard size filter! Money-saving result: Motor lasts much longer, air flow stays stronger, and filter doesn't have to be cleaned so often. At last, a machine that meets the demands of long-time furnace cleaning men at low, low cost! Remember: this is only *one* feature of Premier's new Spic-Span. It would pay you to know *all* the features. Compare Premier's specifications with any other's. (Our specs. are honest-to-gosh true.) For your own best advantage, write for all the details NOW!



"OLD RELIABLE"



Premier 908F — Still the most popular and the most praised of all. Has the working guts and rugged construction for heaviest of heavy-duty jobs. If there is *one* furnace and boiler cleaner you should know all about, this is it! Write Now!

Both Premier machines listed by Underwriters' Laboratories and Canadian Standards Association.



the premier company

735 Woodlawn Ave., St. Paul 1, Minnesota
35 Gerrard St. West, Toronto 2, Canada

The PREMIER Company
735 Woodlawn Ave., St. Paul 1, Minnesota

Please send me more information on your ☐ Spic-Span; ☐ Old Reliable.

NAME _____

FIRM _____

ADDRESS _____

CITY _____

STATE _____

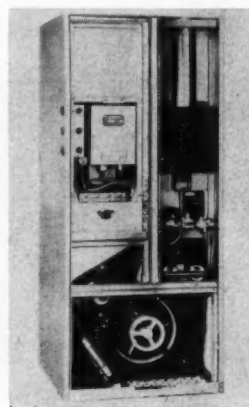
equipment developments

(Continued)

limit control. Vestibule which encloses controls on gas model is optional equipment.

Year 'Round Air Conditioner

COMBINATION HEATING and cooling unit in 2 ton models with 75,000 Btu heating rating and in 3 ton, 105,000 Btu heating capacity — Utility Appliance Corp., 4851 S. Alameda St., Los Angeles 58. Designed for quiet operation, the unit employs a utility blower with resilient mounts and "Sy-lent" heat exchanger. Resiliently mounted "full floating" refrigeration chassis eliminates metal to metal contact. Unit is designed as a



furnace section and cabinet only or as a complete year 'round unit. The 12 in. double width blower has dynamically balanced blower wheel, floating suspension of moving parts and low speed operation. Unit is designed for zero clearance at sides and rear and contains a large air filter area. Glass fiber insulation lines the entire cabinet to reduce condensation and transmission of noise. Heating-cooling thermostat incorporates on-off operation in addition to fan selector switch for continuous or intermittent operation. Refrigerant system is hermetically sealed.

Rubber V Belt

"VIBRASOR" rubber V belt designed to absorb vibration in furnaces, air conditioners, fans, etc.—B. F. Goodrich Co., 500 S. Main St., Akron, O. Special materials are said to give a built-in spring action allowing little or no vibration to reach the framework and minimizing transmission of vibration from one pulley to another.

Polyphase Motors

TYPE DP general purpose ball bearing motors in frame sizes 182 through 326 — Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo. Frames are corrosion resistant cast iron and are smoothly contoured

New... for the price
of a DC welder

ONE WELDER with BOTH AC and DC WELDING CURRENT



**NOW! The ideal arc
for every job**

Lincoln IDEALARC

gives you:

- both AC and DC welding current
- dual arc control for both voltage and current
- arc-booster starting on DC as well as AC
- operation on single phase power

With Idealarc, you can cut duplication of welding equipment and save money on welder cost. That's because Idealarc can be furnished as a straight AC welder and a DC unit can be added, at any time to give you *both* AC and DC welding current.

**GET THE FACTS
ON IDEALARC**

Write for Bulletin 1343



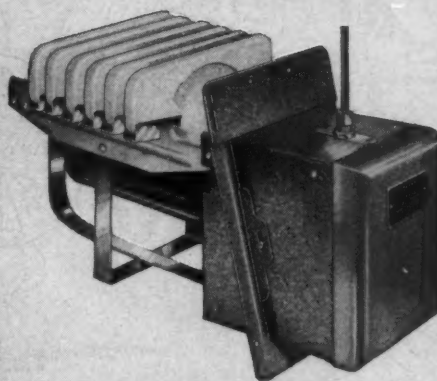
THE LINCOLN ELECTRIC COMPANY

Dept. 3903
CLEVELAND 17, OHIO

The World's Largest Manufacturer of Arc Welding Equipment

Say "Goodbye" to Service Calls

Auto flo "100" AUTOMATIC HUMIDIFIER



**A Unique, Original
Principle of Operation**

No FLOAT No DRIP No CLOG

The humidifier with the most selling features, for more sales and profits, with less servicing. No moving parts to adjust . . . stick or wear out, guaranteeing years of trouble free service. Evaporator plates with patented drain clips that prevent water dripping. The easiest humidifier to install, only one opening to cut, fits all furnaces —any type bonnet. Factory guaranteed for one year.

ASK YOUR WHOLESALE
FOR THE NEW

Auto flo

FUEL OIL
FILTER



AUTO-FLO CORP., 14590 Schaefer, Detroit 27, Mich

Please send me full information on:

- ☐ Auto-Flo Fuel Oil Filter
☐ Auto-Flo "100" Automatic Humidifier

Name _____

Address _____

City _____

Zone _____

State _____

WINDMASTER

the modern draft control
that

**"MOUNTS on
ANY PITCH!"**



As long as it's mounted on the side of the pipe, the pitch makes no difference. Windmaster is a star performer on sloping as well as horizontal and vertical pipes.

Once in the saddle, Windmaster silently rides herd on the slightest increase in draft before the burner knows about it.

Corral these Windmaster advantages
for your jobs

- | | |
|---|--|
| ■ Sloping Pipe Installations | ■ Large Square Vane—more effective area |
| ■ 45° Vane—no nervousness—faster response | ■ Calibrated Counterweight |
| ■ Permanently Silent Non-Rusting Nylon Bearings | ■ E-Z 'Dapter — quick, easy installation |

Check the pitch and you'll see why it pays to say "Windmaster" to your jobber.

Windmaster® Corporation

43 Vine St.

Columbus 15, Ohio

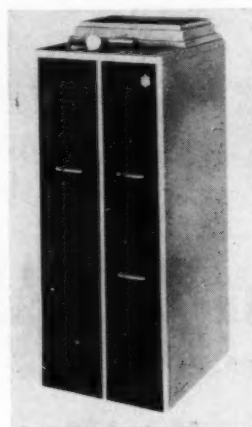
equipment developments

(Continued)

to prevent moisture collection. Ventilating air intakes are located at bottom of endplates and air outlets are at the base of the frames on each side. Specially formed baffle plates direct air into the blowers and through the motor and provide protection for stator windings. Motors are in ratings of 1 to 30 hp, 3 phase, 60 cycles, 1750 rpm.

Year 'Round Unit With Zone Control

"YEAR 'ROUNDER" central air conditioner with automatic zone control — Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago. Central controls direct the cooling effectiveness to the part of the residence being occupied



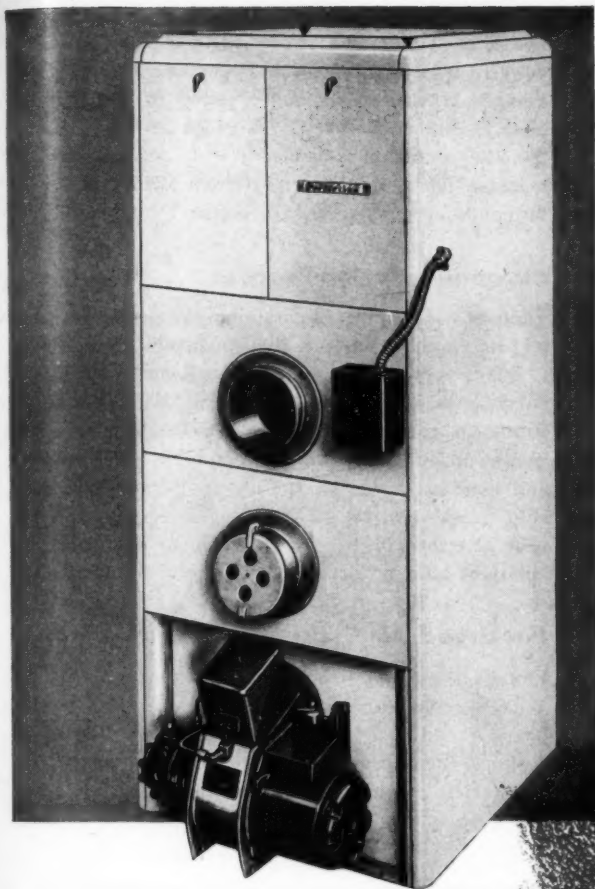
at any time of day. Usual operation diverts as much as 80 percent of the cooling into bedrooms at night and into living areas during the day. A 1½ hp unit with automatic zone control can provide air conditioning for 1800 sq ft of floor area, according to the manufacturer. Unit requires floor space of less than 26 × 30 in. Forced warm air is furnished in the same manner during the winter.

Air Conditioning Timer

FULLY AUTOMATIC air conditioning timer designed for use as an integral part of the unit and incorporating a two day skip feature — Telechron, Inc., Ashland, Mass. Set for manual operation, the unit can be turned on and off in the conventional manner; set at automatic, on and off control can be preset for any hour. Skip feature covering one or two days shuts off the air conditioner for the weekend and turns it on automatically so the room is conditioned on return.

Induced Draft Cooling Tower

"HIDEWAY" induced draft cooling tower in ratings from 2 to 15 tons — Toungate & Coats, P.O. Box 241, Austin, Tex. Adaptable for both residential and com-

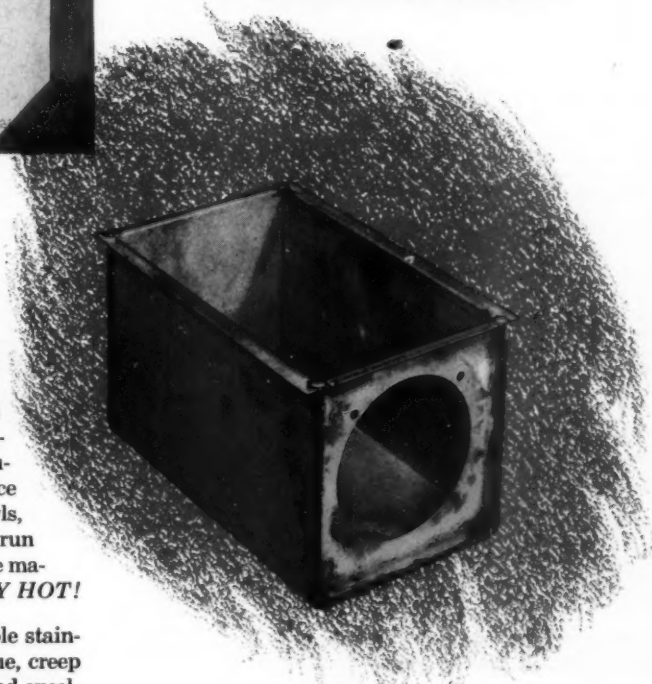


If it's meant to get

HOT

...use

**CRUCIBLE
STAINLESS**



Say "stainless steel," and most everyone thinks of bright appearance . . . corrosion resistance . . . strength without excess weight. But these properties are actually secondary in some applications.

As an example, take stainless steel's remarkable resistance to heat. That's the reason why The Perfection Stove Company uses types 309 and 430 Crucible stainless steels for its gas- and oil-fired furnace components — fireboxes, throat and burner bowls, combustion chambers, and baffles. In the long run stainless is the most dependable and least expensive material they can use for these parts that get **REALLY HOT!**

Of course, in addition to heat resistance, Crucible stainless steels offer corrosion resistance . . . high fatigue, creep and structural strength . . . resistance to wear . . . and excellent workability. And at Crucible, stainless steels are made by specialists who are concerned only with special purpose steels. They welcome the opportunity to help you select the best grade for the job. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 30, Pa.*

Crucible Type 430 firebox for the Perfection OC 90V Oil-Fired Furnace.

CRUCIBLE

first name in special purpose steels

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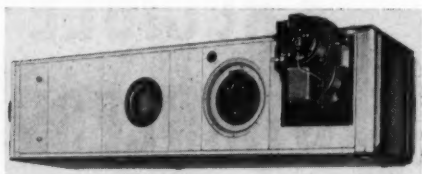
equipment developments

(Continued)

mercial installation, the tower features redwood construction designed to reduce corrosion and chemical reactions. Distributing pan and deck are held with galvanized bolts; all fittings are galvanized. It has a 220 v single phase motor and stamped aluminum fan blades pitched 25 to 35 deg to reduce noise. Water distribution is by gravity flow. Tower includes all fittings and float valve; unit is suitable for indoor and outdoor installation.

Oil Fired Lowboy Furnace

MODEL PY-224-E oil fired lowboy furnace for suspended installations — Henry Furnace Co., Medina,



O. Firing at a rate of 2 gal, unit is rated at 224,000 Btu bonnet output. Featured is a cylindrical heat exchanger. Oil burner is a high pressure gun type with vortex action blower. Unit utilizes 20 × 25 in. filters

THIS IS IT!

One source for prefabricated furnace fittings, grilles, diffusers, humidifiers and rain goods



You can buy any or all of the top-quality Char-Gale products listed here in mixed truckloads, delivered direct to your door by Char-Gale's own fleet of trucks. You don't need large inventories which tie up your space and working capital, yet you can offer your customers quality equipment *when they want it*. Look over this list, and write, wire or phone us for specific information.

Ask about the extra-capacity Gale-Aire 4½" System.

in 28 × 28 in. air intake and discharge openings. Forced air circulation is supplied by a 12 in. blower, powered by a ½ hp motor and operating at 2800 cfm. Shipped in two sections, unit is 102½ × 32 × 32 in. Heat exchanger section is assembled at the factory; the other section is assembled at installation. Fastened together, the unit is suspended from factory installed fittings from either the top or bottom.

Chromium Fusion Process

PROCESS WHICH diffuses chromium into ferrous metals to form stainless surface alloy to depths from 0.001 to 0.008 in. without causing dimensional changes — Alloy Surfaces Co., 1115 N. 38th St., Philadelphia 4. Process is said to permit ferrous metals to resist corrosion under most severe atmospheric, heat, water and chemical corrosion conditions. Surface will not chip, crack, peel or gall when processed product is bent, stretched or twisted and welding can be done before or after processing, according to the company.

Packaged Air Conditioners

EIGHT AIR and water cooled air conditioners in 2, 3, 5 and 7½ ton sizes — Mitchell Mfg. Co., 2525 N. Clybourn Ave., Chicago. Featured are hermetically sealed cooling system; blower section which can be mounted in a variety of ways; plenum chamber which provides for front, side or rear discharge and has a louvered



300,000 square feet of productive capacity to give you convenience in ordering, plus quick service and big savings on these sheet metal products:

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- Galvanized Fittings
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- Baseboard Diffusers in 2, 4 and 8 foot lengths.

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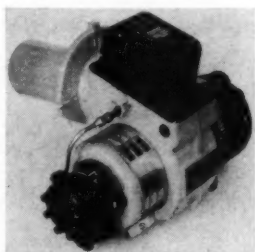
equipment developments

(Continued)

grille with vertical and horizontal adjustments. "Electromagnetic Filter Eye" constantly measures filter efficiency and switches on a warning light when the filter should be replaced. Safety features include high and low pressure cutouts and thermal overload switch.

Oil Burners for Residential Units

RESIDENTIAL oil burners ranging from 0.65 to 5 gph — Nu-Way Corp., 2416 Fourth St., Rock Island, Ill. Model F-285 is an underslung overshot design for small spaces; firing range is from 0.65 to 2.85 gph. According to the manufacturer, more than 20 different firing



combinations are possible. Hinge transformer permits quick access to firing components; 60 second removal of the firing assembly is claimed. Model IXL-175, with a firing range of 0.65 to 1.75 gph; Model IXL-300, 1.75 to 3 gph; and Model XL-500, 2 to 5 gph comprise the series. All units have sand cast aluminum alloy housings, large fan and heavy duty transformers. Model F-285 has integral or adjustable loose flanges; Models IXL-175 and IXL-300 use adjustable floor or flange mountings.

Deep Throat Press

FIFTEEN TON, 15 in. deep throat press designed for fast precision stamping, minimum down time and long life — Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles 22. Construction features include: one-piece alloy steel crankshaft, 2 3/8 in. pin diameter; 20 in. diameter, 200 lb flywheel on roller bearings; long V type ramways, multiple rib press frame. Ram hole is 1 9/16 in.; ram area is 4 x 5 in. Driving mechanism is self contained in the clutch collar; flywheel has companion drive which is heat treated and precision ground. Single trip control reportedly eliminates lost motion and requires only 1 to 2 lb operating pressure. Press is available in single, double hand or foot control.

Compound Action Snips

"METAL MASTER" compound action snips with vinyl grips — J. Wiss & Sons Co., 11-45 Littleton Ave., Newark 7, N.J. Primary function of grips is greater

*easiest installation!
lowest operating cost!
highest cooling efficiency!*

CHILL-AIR EVAPORATIVE COOLERS

**for Home—
Business—
Industry**



INDUSTRIAL AND COMMERCIAL COOLERS

Model No.	CFM	HP	Cu. Ft. of Space to be cooled
45P	4500	1/2	3,000-4,000
70P	6800	3/4	3,500-6,000
100P	9600	1	7,000-15,000
150P	15000	2	15,000-30,000

Above motors 110-220 v. single phase
(three-phase motors available on order)

For more than 20 years the complete Chill-Air line of Evaporative Coolers for home, commercial and industrial use have proved their merit in design, construction and performance. Easier installation, servicing and maintenance, plus low operating expense and high cooling efficiency contribute to Chill-Air's ever-growing popularity with contractors and building owners.

Chill-Air industrial and commercial coolers are designed for easy installation on the roof or sides of buildings. Available in standard models for reducing temperatures 12-18° in spaces from 3,000 to 30,000 cf. Larger models built to exact specifications.

Uniform, non-clog water distribution troughs and easily removable evaporative pads assure maximum evaporative surface. The 110-220 v. motor can be oiled and serviced by simply removing pads. Recirculating pump systems eliminate water waste.



Single speed models have variable air control damper. Window adaptor extra on Model 45 WP.

CHILL-AIR MOR-VIEW

WINDOW COOLERS for rooms, homes, offices, shops, etc. are equipped with window adaptors and come ready for operation. No wiring or holes to cut. Just set in window, connect to waterline and plug into nearest 110 v. outlet.

MOR-VIEW COOLERS—6 Models

Model No.	Max. CFM	HP	Speeds	H	Size W D
20 WP	2000	1/8	4	23 1/2	27 16
30 WP	3200	1/8	1	39	31 24
32 WP	3200	1/8	2	39	31 24
40 WP	4000	1/8	1	39	33 28
42 WP	4000	1/8	2	39	33 28
45 WP	4500	1/8	1	39	33 28

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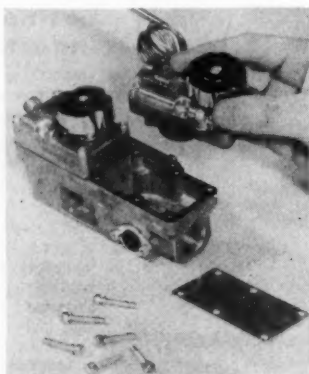
Sales Division
SEDALIA, MISSOURI

equipment developments (Continued)

leverage and maximum gripping comfort; additional feature is color identification on all four models. Model M-1 cuts left; M-2 cuts right; M-3 cuts straight, shallow arcs and pivots; M-5 is for notching. The 10 in. snips are made from high carbon alloy tool steels.

Pilot Control, Thermostat Package

"ADATROL" model V5153 valve and pilot control package designed to increase the flexibility of control sys-



tems of gas room and wall heaters — Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. S., Min-

neapolis 8. Control includes a basic valve section with factory mounted "pilotstat" gas cock. Models are available with factory installed thermostat or with a thermostatic kit. Package control is also available with minimum rate high-low bypass assembly and a spring loaded pilot filter. Optional add-on kits for components will reduce the manufacturers' and dealers' inventories, according to the company. Range of the thermostat is 55 to 95 deg; bypass mounts below the pilotstat valve and does not affect 100 percent safety shutoff or safelighting, the company reports. Control is available in $\frac{1}{2}$ and $\frac{3}{8}$ in. sizes. Pilot flow adjustment screw is standard.

Glass Fiber Cooling Towers

"DURO-LITE" glass fiber cooling towers in 3 to 10 ton sizes — Walter L. Johnson Associates, 1004 Baltimore Ave., Kansas City 6, Mo. Towers have no seams or welded joints, are rustproof and fire and acid resistant, the company states. All nuts and bolts are naval bronze; fan shaft is stainless steel; fillings are redwood. Fans are deep pitched and fan housing has galvanized steel mesh safety guard.

Reversed Cycle Conditioner

REVERSE CYCLE, dual room air conditioning units in $\frac{3}{4}$ and 1 hp capacity employing piston operated com-

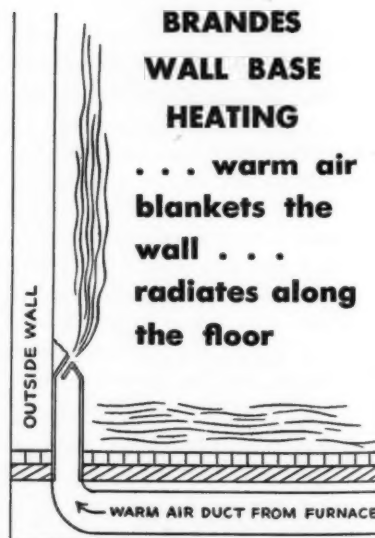
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*THE ORIGINAL PATENTED WALL BASE HEATING

That's right! Since Brandes introduced Wall Base Heating many have tried to imitate. But most people know there is only one time-tested winner! That's Brandes . . . easy to install and low in cost. With Brandes the experiments are over . . . they know what they're doing! For the best, write the Brandes Company, 2046 Winnebago Street, Madison 4, Wisconsin.

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Heats Better!
Is Better!
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WALL BASE
HEATING**

**. . . warm air
blankets the
wall . . .
radiates along
the floor**



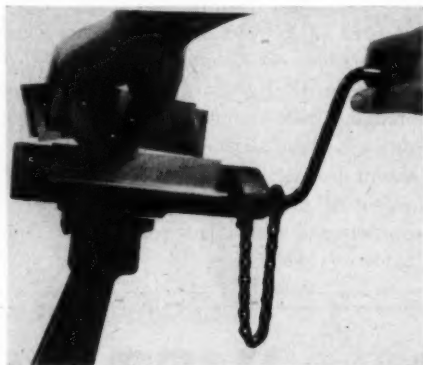
equipment developments

(Continued)

pressors for heating as well as cooling — Carrier Corp., 300 S. Geddes St., Syracuse 1, N.Y. Units are designed for mild winter climates or for between-season use to temper the air without turning on the central heating system. Common grille and casing permit installation in 14 different ways. Unit is switched from cooling to heating by simple control which reverses the direction in which heat is moved by the refrigerating system; refrigerant is vaporized by absorbing heat from the outside air, increasing the temperature level.

Ferrule Former for Field Work

PORTABLE FERRULE FORMER which can be mounted on a bench or tail gate of a truck for forming ferrules



on the job — Peck, Stow & Wilcox Co., Center St., Southington, Conn. Weight with standard is approximately 20 lb. Ferrules up to 7 in. can be formed from copper, aluminum or galvanized sheet metal.

Emergency Damper Opener

THERMALLY actuated emergency damper opener for "Sky Blast" power roof ventilators — Robbins & Myers, Inc., 1345 Lagonda Ave., Springfield 99, O. Unit is designed to allow the roof ventilator to serve as a venting device for smoke, heat and fumes in the event of fire. Device is independent of electrical equipment which might be damaged by fire or water. There are no motors, thermostats, wiring or counterweights. Fusible link holding twin high torsion alloy steel spring arms breaks at pre-selected critical temperature, allowing the arms to open the dampers for unobstructed escape route for smoke and fumes. Unit is in two sizes for ventilators from 24 to 60 in. diameter; temperature ratings range from 135 to 360 F.

Gas Fired Horizontal Furnace

GAS FIRED horizontal furnace with ceramic coated heat exchanger to resist rust — Permaglas Div., A. O.

**WEATHER-PROOF
FUME-PROOF
LEAK-PROOF
FOOL-PROOF**

* Rochester Universal OIL TANK GAUGES



DON'T . . .

TAKE THE CHANCE
OF RUINING A
GOOD INSTALLATION

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HAVING THE BEST . . .
YOU'LL BE GLAD YOU
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UNIVERSAL OIL TANK
GAUGE

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WHOLESALE
EVERYWHERE



1. The pressure tight head is sealed and weather-proofed so it can be used indoors or outdoors. Only one type gauge needed for any installation.
2. Head is hermetically sealed making it leakproof, dust-proof, and absolutely shock-proof.
3. There is no opening of any kind into the tank. The dial indicator works on a magnetic DRIVE, giving perfect reading at all times.
4. Safety factor far exceeds the requirements of the Underwriters. The model 3175 gauge withstands tank pressure of 200 pounds per square inch.

ROCHESTER
MANUFACTURING COMPANY, INC.

DIAL THERMOMETERS GAUGES AMMETERS



8 ROCKWOOD STREET

ROCHESTER 10, N.Y., U.S.A.

equipment developments (Continued)

Smith Corp., Kankakee, Ill. Model ranges from 60,000 to 140,000 Btu input. Controls are enclosed; variable speed blower and dual flow outlets allow flexibility of installation. Unit is designed for installation in attic, crawl space or below basement or utility room ceiling, using a horizontal outlet draft diverter to save headroom.

Belt Drive Ventilator

MODEL BD 1000 to 16,500 cfm belt drive aluminum centrifugal ventilator with removable aluminum shell



and aluminum blower wheel — Loren Cook Co., Depot St., Berea, O. The 16,500 cfm size is 41½ in. high, weighs 250 lb. Roof curb of 6 in. is required. Low

tip speeds and rubber mounted drive assembly are designed for quiet operation. Wheel is non-overloading; motor is sealed from air stream. Shell and base can be separated into two units by removing four bolts.

Baseboard Extended Diffusers

"PERIM-O-THERM" perimeter baseboard heating and cooling extended diffusers constructed of heavy mill primed steel — Flangeklamp Corp., 80 Leslie St., Buffalo 11, N.Y. Units can be decorated to blend with the room decor. Self contained damper running the entire length of the unit provides cloak of warmth for outer walls and window areas, according to the manufacturer; slip lock construction was designed for easy installation. Units can be used with basement, slab, crawl space, as well as many commercial installations.

Gas Fired Furnace Series

"GEM" gas fired CGA series of highboy, lowboy and counterflow furnaces — Columbia Burner Co., 729 Ewing St., Toledo, O. Highboys and lowboys are in five sizes ranging from 70,000 to 200,000 Btu input; counterflow is in three sizes from 70,000 to 135,000 Btu. Each unit has sectional, welded tubular, ribbed heat exchanger. All models feature front position built-in draft diverters and slotted cast iron burners. Blower is on track for servicing.

Announcing the New "JET-8"



GAS CONVERSION BURNER

Make this your BANNER YEAR for profits, with Banner's new "Jet-8" Gas Conversion Burner. Many new features help you step up sales and increase dollar volume:

1-Piece Cast Iron Burner Head — The upright posts supporting the flame spreader give best mixture of secondary air and gas mixture for perfect combustion.

Telescoping Venturi — gives you a burner that fits the shortest — or longest — furnaces and boilers.

Minneapolis-Honeywell Powerpile Controls.

Input — 80,000 to 200,000 B.T.U.

Silent Operation.

Competitively priced — for more Dealer Profit.

Write today for complete information and prices.

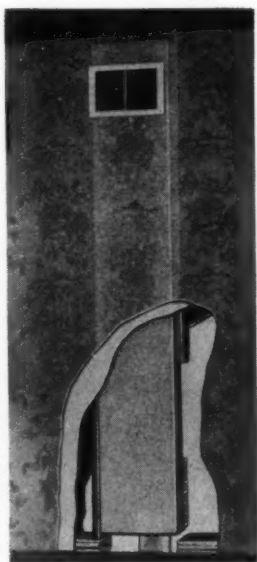
BANNER BURNER COMPANY

227 E. INDIANOLA AVE. • YOUNGSTOWN, OHIO

equipment developments

Counterflow Wall Furnace

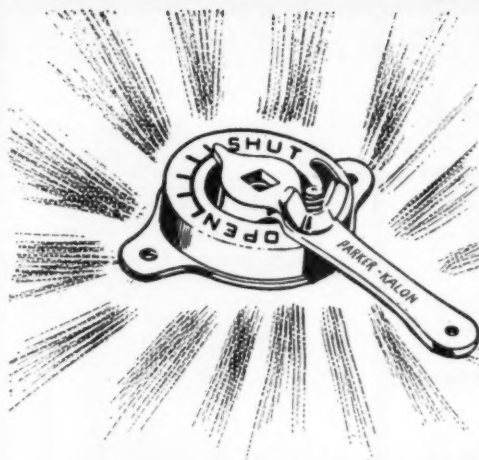
"FORSAIRE" counterflow forced air wall furnace said to circulate warm air at lower room levels, heat more area and eliminate heat layers — Williams Furnace Co., 1821 Flower St., Glendale, Calif. Warmed room



air is "salvaged," pulled in at top of the unit by $8\frac{1}{2}$ in. dual inlet blower, forced down over the heating element and out through diffuser type grilles to the floor. Unit can be recessed between 2×4 in. or larger studs on 16 in. centers. Zero clearance on back and sides allows installation against wall or as free standing heater. Heat exchanger has split top design to provide more heating surface and is ceramic coated. Centrifugal blower has multi-vane balanced wheel and rubber mounted motor.

Flexible Connector

"FLEXIPIPE" corrugated connector for use with remote air conditioning systems — The American Brass Co., Metal Hose Branch, Waterbury 20, Conn. Connector is intended for use in liquid and suction lines to reduce vibration due to equipment operation and to relieve stresses on fitting joints where tubing makes sharp bends



DIAL DAMPER REGULATOR
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Preassembled Duro-Metal-Fab is another outstanding Duro-Dyne product. With Duro-Metal-Fab, flexible duct connectors (for eliminating vibration travel) can be made three times faster. Metal comes already attached to U.L. Approved Canvas, closely woven Asbestos or Neoprened Fiberglas Fabric. No time or material is wasted attaching metal to fabric, thereby slashing flexible duct connector costs. With Duro-Dyne's exclusive Double-Loc seam, the metal will not separate from, or cut the fabric when installed. This eliminates call-backs.

Complete catalog fully describes Duro-Metal-Fab and Dial Regulators, as well as the extensive line of other Duro-Dyne products—including those formerly manufactured by Parker-Kalon. Products are available at your P-K-Duro-Dyne distributor.



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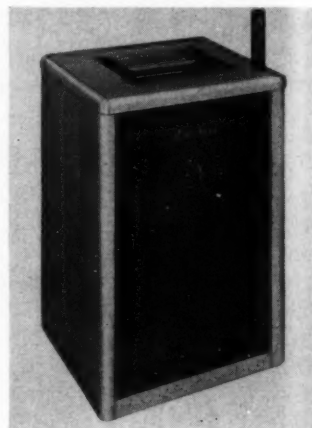
TOOLS • HARDWARE • STEEL • STEEL STRAPPING

equipment developments

around building supports and other structural features.

Cooler With Flexible Lines

"FLUIDAIRE" hermetically sealed air conditioning unit with flexible refrigerant lines — Fluid Heat Div., Anchor Post Products, Inc., 6720 Eastern Ave., Baltimore 24. Evapo-



rator coil is installed in the supply plenum to eliminate extra ductwork and dampers; condenser is air cooled. Unit utilizes the furnace blower and air distribution system. Flexible 5 ft refrigerant hose permits leeway in placement of the unit and simplifies installation. Refrigerating system is completely dehydrated. Capacity of model AC-3 is 3 hp; rating is 34,000 Btuh.

Oil Fired Furnaces

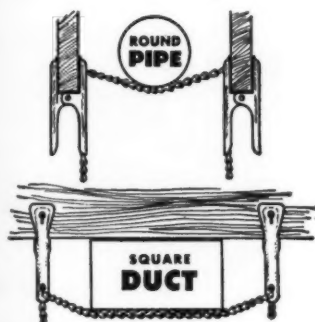
MODELS OB 95V and OB 110V oil fired furnaces with blower which regulates the circulation of air according to the amount of heat in the plenum chamber — Perfection Industries, Inc., 7609 Platt Ave., Cleveland 4, O. Model OB 95V has a 95,000 Btu output; model OB 110V has an output of 110,000 Btu. Pressure atomizing burners which burn no. 2 catalytic cracked oil have constant electric ignition, single stage pumps; burner "floats" on sound absorbing rubber cushions. Designed for basement installation, units have

equipment developments

cabinets finished in baked enamel; glass fiber liners are faced with aluminum foil. Furnaces warm, filter, humidify and circulate the air, the company reports.

Duct Holder Clamps

DUCT HOLDER clamp set designed to hold round or square duct securely between or under floor joists—Malco Products, 4032 12th Ave. S, Minneapolis 7, Minn. Two pairs of spring

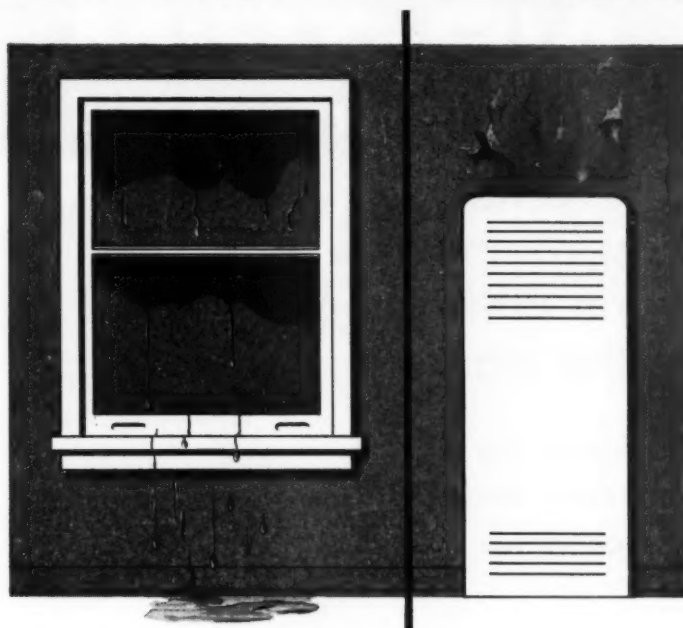


powered clamps attach tightly to joist; 4 ft sash chain passes through any of four openings in clamps to support any size duct. No. 8 coppered steel chain has a breaking strength of 350 lb and will lock in the tools at $\frac{1}{2}$ in. intervals along the entire length of the chain. Main feature is ease of installation, according to the company. Clamps may also be used for holding patterns to a bench, clamping stacks of sheets for sawing and other shop applications.

Flexible Ball Joints

PREFABRICATED sheet metal flexible ball joints in eight duct sizes ranging from 3 to 12 in. in diameter — Spincraft, Inc., Dept. AA, 4132 W. State St., Milwaukee, Wis. Flexible ball joints can be used in exhaust systems for dust and noxious fumes and in blower systems for air conditioning and ventilating. Units are of three piece construction and are easily positioned without heavy supports, according to the manufacturer.

THE VENT THAT FAILED



This Could Happen To Your Customers

... if you're installing incorrect venting for their gas-burning appliances. And blistered walls... unhealthy, stale-smelling room air... condensation damage to walls and furnishings are just a few of the things that can happen when inadequate single-wall pipe, uninsulated vent connectors or other improper venting procedures are used.

The result can be equally damaging to your reputation as a dealer or contractor.

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This modern double-wall insulated vent features an **inner pipe** that keeps vent gases hot, assuring a strong draft for their quick, complete removal... an **outer pipe** that stays cool, preventing dangerous overheating of adjacent construction. And no mastic, tape nor heavy bracing is needed to install sturdy, lightweight Metalbestos — your insurance against customer complaints and time-consuming service calls.



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Top efficiency plus economy assured through easy-to-install baseboard that distributes warm air evenly over extended wall areas. Eliminates wall "streaking" and "scorching" of drapes and curtains.

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The distinctive design helps to make your selling job easier. Smarter looking, more attractive, AIR-TRIM pays you a bonus in increased sales. And its packaged for easy stocking 2, 4, 6, 8 and 10 ft. lengths.

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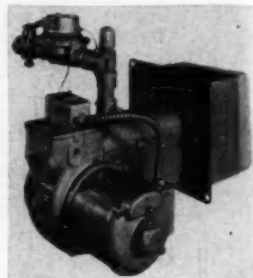
Write now for your
AIR-TRIM Bulletin.
Data and installation
instructions included.

equipment developments

Flexible ball joints are electro-zinc plated on all surfaces before assembly. The company reports that the 7 and 9 in. sizes provide a total arc of 45 deg; all other sizes permit 55 deg deflection.

Incinerator Burner

SMALL PACKAGED burner designed to produce a slow, steady fire with semi-luminous flame for efficient incineration — Eclipse Fuel Engineering Co., 1017 Buchanan St., Rockford, Ill. Capacity on one burner



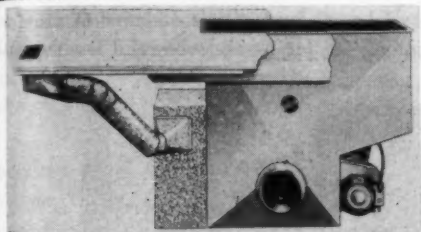
ranges from 50,000 to 500,000 Btuh. Flexibility of flame and heat output makes the burner suitable for safe, quick adjustments to various needs and permits complete incineration of flue products, the manufacturer states. Burner assembly is complete and ready to operate as soon as the gas supply and electric motor control switch are connected. Safety pilot assures main gas shutoff in the event of pilot failure, according to the manufacturer.

Aluminum Air Filter

"LIFELONG" aluminum air filters in which every air opening is precision stamped to predetermined tolerance — George Evans Corp., 121 37th St., Moline, Ill. Control of size, shape and position of air scoop openings allows stamping of larger openings on inlet side, graduating to smaller openings on the outlet side of filter medium; new design gives more dirt capacity without restriction of airflow, according to the company. Burred "talons" in each opening are said to catch and hold dust and lint.

Gun Fired Counterflow Furnace

MODEL SR-105 gun fired counterflow furnace with "built in" return air grille — Thermo-Products, Inc., North Judson, Ind. With the warm air heating plenum, it has an overall depth of 34 in. for installation in homes with limited ground clearance. End plenum



chamber permits installation of warm air distribution ducts. Furnace is fired with a gun type oil burner and equipped with a refractory combustion chamber. Output of the unit is 80,000 Btu at the bonnet. Filtered air is circulated by means of a centrifugal blower. The 24 X 36 in. grille at the top serves as a central return grille.

Parallel Edge Scriber

PARALLEL EDGE scriber graduated by sixteenths from 1/8 to 1 in. — Dayton Rogers Mfg. Co., 2824 13th



Ave. S., Minneapolis 7. Scribing gage is made from cold finished strip steel, stencil-engraved for scribing parallel lines on all sheet stock including sheet synthetics, plywood, etc. Tool can be used by sheet metal workers for scribing lines from a given edge of a piece of sheet or stock material. Scriber may be obtained from the manufacturer free of charge on request written on company letterhead.

Lowboy Oil Furnace

MODEL OY-85-E oil fired lowboy furnace in 0.75 gal, 84,000 Btu size — C. A. Olsen Mfg. Co., Filbert St., Elyria, O. Designed for installations in moderate size homes where no floor space is available, the new "Luxaire" unit can be suspended from or placed on the rafters. Unit is 77 1/2 X 20 X 20 in. Air intake and discharge openings are 18 X 18 in. and one 20 X 20 in. filter is utilized. Cylindrical combustion

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— because to solve any cooling problem you can depend on a

WinterAir

EVAPORATIVE COOLER



SIDE DISCHARGE



DOWN DISCHARGE

COMMERCIAL and INDUSTRIAL MODELS

Side Discharge or Down Discharge models. Engineered for efficient, economical cooling and ventilating of large areas. Entire cabinet of heavy-gauge steel, electrically all-welded, one-piece construction. Statically and dynamically balanced blower wheel. Adjustable drip troughs. Removable non-sag pads. Hammertone enamel finish.

24 MODELS TO CHOOSE FROM
3,000 CFM to 12,500 CFM
Single or 2-speed

WINDOW MODELS for Home and Office

More cooling capacity plus controlled air flow. All steel, all-welded, one-piece cabinet. 4-way grilles plus air control damper. Adjustable drip troughs. Hammertone enamel finish. No outside supports necessary.



16 MODELS TO CHOOSE FROM
2,200 CFM to 4,500 CFM. Single or 2-speed. With or without recirculating pump.



WINDOW FAN MODELS

Made in two CFM capacities. Flush window mounting. Heavy gauge steel cabinet finished in Hammertone enamel. 1 to 3-speed motors. No outside supports necessary.

3 MODELS TO CHOOSE FROM
1,250 CFM to 1,800 CFM
Single to 3-speed. With or without recirculating pump.

More than beauty goes into every WINTER AIR Evaporative Air Cooler. Research, engineering, new methods of production, improved materials and assembly line technique are only a few of the many reasons for superiority in performance, in construction and in customer preference.

Write for Our New Complete Catalog

J. R. DRY & SONS
WINTERS, TEXAS

equipment developments (Continued)

chamber is fired by a pressure atomizing, vortex action, gun type oil burner. A 9½ in. blower supplies forced air circulation at a rate of 1000 cfm.

Dampers for Perimeter Diffusers

BUILT-IN damper mechanism for the company's line of perimeter diffusers — Titus, Inc., 1304 Broadway,



Waterloo, Ia. Damper operates by means of lever control from center of the top slot; it adjusts from full open to full closed position easily, according to the company. Damper is provided with adjustable screw stop to meet special air volume requirements. Operating mechanism is said to be foolproof.

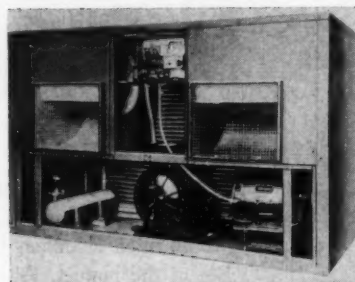
Gas and Oil Fired Furnaces

"LO-BOY TRIPLETS" gas and oil fired warm air furnaces using natural, mixed, LP gas or oil interchange-

ably — Firewel Co., Inc., 3685 Broadway, Buffalo 25, N. Y. Units are designated 100 GLB (gas fired) and 90 OLB (oil fired) lowboys; models 125 GLB and 115 OLB are available on special order. Equipped with large, quiet blowers and insulated with aluminum foil and glass wool, the units direct filtered and heated air where and when it is needed, the company states.

Air Cooled Condensing Unit

AIR COOLED 5 hp condensing unit designed to provide air conditioning for large residences and commercial



buildings — United States Air Conditioning Corp., 3300 Como Ave. S.E., Minneapolis 14. Unit is remotely installed and used in conjunction with a housed direct expansion cooling coil or coil and blower combination. Components include compressor, motor, receiver and condensing coil.



CONDUCTOR ELBOWS AND SHOES

- ALL SIZES
- ALL ANGLES
- ALL GAUGES
- ALL METALS

"Tapered to Fit"

"Galvanized after Formed"

THE CINCINNATI ELBOW CO.

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Cincinnati 27, Ohio

SEE YOUR JOBBER

new literature . . .

Air Conditioning Units, Parts

DATA ON WINTER and summer air conditioning units and accessory equipment is presented in a catalog which has been divided into six sections to provide easy reference — The Majestic Co., Inc., 733 Erie St., Huntington, Ind. Equipment described, in addition to summer and winter air conditioners, includes chimneys and fireplaces, fittings and parts. A 20 page section illustrates the various advertising mats available and another section contains prices.

Heating and Sheet Metal Equipment

CATALOG NO. 55 (18 pages) presents information on standardized duct and fittings — Standard Furnace Supply Co., Ltd., 714 S. 72nd St., Omaha. Included are illustrations and descriptions of round and rectangular dampers, duct elbows and end caps, chimney caps and tops, takeoffs, tee joints, etc. Also being offered is catalog No. 55-A covering rain goods, filters, insulation, registers and grilles.

Residential Air Conditioning Units

Cartoon booklet entitled *Who's Zoo in Air Conditioning* explains what air conditioning has done for animals and can do for humans — Carrier Corp., 300 S. Geddes St., Syracuse 1. The booklet reproduces the animal figures being used in current consumer advertising. Following the cartoons is an illustrated section showing air conditioning equipment for various applications. Also being offered is a four page folder covering mobile home air conditioners designed for installation in new or existing mobile homes.

Fractional and Integral HP Motors

CATALOG GEC-1026 (28 pages) presents buying information on standard a-c fractional and integral hp motors — General Electric Co., Schenectady 5, N. Y. A special section on the selection of integral hp motors covers hp requirements, enclosures, starting current limitations, speeds, motor types and selection of fuses and circuit breakers. Information on all motors includes photos, ratings, book prices, dimensions, weights, frame numbers and standard modifications.

Cooling for Multi-Room Buildings

INDIVIDUAL ROOM controlled air conditioning for multi-room buildings is described in a four page illustrated circular — Airtemp Div., Chrysler Corp., 1600 Webster St., Dayton 1, O. The air conditioners may be used either in multi-story applications or for single story buildings such as auto courts, motels and single story office buildings. The unit is compact in design and is set in the wall to avoid taking up floor space. The louvered exterior can be located either underneath

Designed especially
for use by **TINNERS**



Illustrated at left: No. LP900 Fire Pot complete with 11-lb. tank. (No. LP901 has 5-lb. tank; No. LP902 has 20-lb. tank.) Below: No. LP906 Furnace Assembly (to fit on tank with 3" flange-type valve) and No. LP907 Base (for use with No. LP906 to convert Assembly to bench-type furnace).



NEW Turner U-type burner and heating chamber designed for the quiet, clean, economical operation formerly found only in non-portable indoor installations.

TURNER

LIQUEFIED **LP** PETROLEUM

TINNER'S FIRE POT

Instant-lighting and fast-heating . . . ready for immediate operation • Gas and air controls . . . equipped with both for easy adjustment to any desired flame volume • Low cost operation . . . saves money by saving warm-up time • Safer and cleaner . . . no fuel spilling; virtually tip-proof; clean flame; chemically stable fuel is non-toxic, non-explosive from concussion, produces no noxious fumes • Large heating chamber . . . accommodates two 8-lb. coppers or three 6-lb. coppers without crowding • Portable, balanced . . . entire unit, including coppers, may be carried by the bail easily and without tipping • Developed for all industrial and residential sheet metal applications; tested and job-proved by tinner's in actual use!

THE TURNER BRASS WORKS

SYCAMORE **T** ILLINOIS
Since 1871

Gas Burners for Every Conversion Job!

45,000 TO 2,000,000 BTU

BARBER INSHOT VENTURI

Lowest initial cost; simple orifice change adapts to all gases; lightweight, and easy to install. Up to 250,000 BTU.

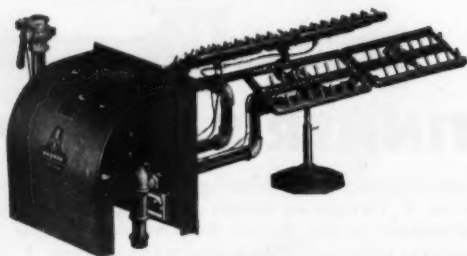


BARBER UPSHOT

Easy to install burner for any type boiler, or furnace unit. Efficient, economical. Available to 400,000 BTU input.

BARBER MULTIPLE JET

Finest burners made. Available round or square to fit any boiler or furnace. Available to over 2,000,000 BTU.



For prices and specifications on Barber Burners write to the Barber Gas Burner Co., 3704 Superior Avenue, Cleveland 14, Ohio.

THE *Barber* GAS BURNER CO.

new literature

(Continued)

a window or in a solid wall and is designed to extend only $\frac{1}{2}$ in. beyond the building line in a 12 in. masonry wall.

Heating and Cooling Units

CATALOG INSERT gives dimensions and general specifications of "Sun Fuel-Master" heating and cooling units — J. V. Patten Co., 550 DeKalb Ave., Sycamore, Ill. The folder (form No. C155) is illustrated throughout with photographs of units completely cased as well as with the casings removed to show components.

Closure Strips

PREMOLDED CAULKING STRIPS for sealing openings in corrugated coverings are described in bulletin 522 (12 pages) — Fabricated Products Co., Water St., West Newton, Pa. Closures recently added to the company's line include 4.2 in. rubber composition types for use with corrugated cement asbestos and translucent structural panels and 4 and 8 in. rubber composition strips for use with ribbed sheets. Line drawings explain use of the closures in various applications.

Gas and Oil Furnaces

CATALOG No. WA 255 (eight pages) covers counter-flow, highboy and lowboy gas and oil fired forced warm air furnaces — Firewel Co., Inc., 3685 Broadway, Buffalo 25. Illustrations include cutaway drawings with components identified with key numbers as well as photographs of complete units. Also illustrated and described is a blower filter unit designed to provide forced air heating for homes with existing gravity systems.

Ventilating and Exhaust Systems

CORROSIONPROOF ventilating exhaust systems are described in an eight page catalog insert — American Agile Corp., P. O. Box 168, Bedford, O. Complete data is given for duct and fittings, fans and blowers, hoods and weather caps. The folder is illustrated with line drawings and photographs, and a special section explains how to estimate the cost of installing a complete duct system.

Cooling Homes and Small Buildings

HELPFUL TIPS on ways to apply economical and efficient air conditioning to different types of buildings ranging from homes to small manufacturing plants and retail establishments are outlined in booklet A-8726 (36 pages) — E. I. Du Pont de Nemours & Co., 6529 Nemours Bldg., Wilmington, Del. Entitled *Guideposts to Better Air Conditioning Installations*, the booklet is a compilation of semi-technical articles by well known

engineering consultants. Separate sections are devoted to comfort cooling of living quarters including restaurants, stores and small commercial buildings. Another section contains suggestions on the most practical location of air conditioning equipment from a building design standpoint.

Electronic Air Cleaners

EIGHT PAGE booklet, *The Philadelphia Story*, describes electronic air cleaning equipment and illustrates various applications in the city of Philadelphia — Trion, Inc., 1000 Island Ave., McKees Rocks, Pa. Request geographic study GS-10.

Automatic Heating Controls

HEATING CATALOG 1508-Z illustrates and describes automatic controls for oil, gas and coal heating — Penn Controls, Inc., Goshen, Ind. Included is information on the new type 880 combination heating-cooling thermostat available in seven basic constructions for correct application with various residential air conditioning systems. Also included is data on a new line of gas controls.

Heating and Sheet Metal Equipment

EQUIPMENT AND SUPPLIES used and installed by heating dealers, sheet metal shops and service-repair companies are described and illustrated in a 200 page buyer's guide — G. W. Berkheimer Co., Inc., 1040 Washington St., Gary, Ind. Model numbers, capacities, sizes and prices are included. The book is divided into eight sections — furnace pipe and fittings; rain carrying and other sheet metal products; registers and grilles; shop supplies and miscellaneous products; oil-firing and related products; year 'round air conditioning equipment; control devices and electric motors; and power and hand tools. Send requests on company letterheads.

Porcelain Enamel Panels

FOUR PAGE COLOR SELECTOR contains reproductions of 50 standard colors and stipple combinations obtainable in architectural porcelain enamel — Erie Enameling Co., 1498 W. 20th St., Erie, Pa. Also contained is information on the "color memory" system which permits matching of production runs at later dates.

Installation of Gas Equipment

SECOND EDITION (Z21.30-1954) of *American Standard Installation of Gas Piping and Gas Appliances in Buildings* includes recent piping and installation practices proven to be acceptable by experience in the field — American Gas Association Laboratories, 1032 E.

Only WALKER Has It!

Automatic Draft Control with
Full Protection at All Vital Points!



Pat.
Pending

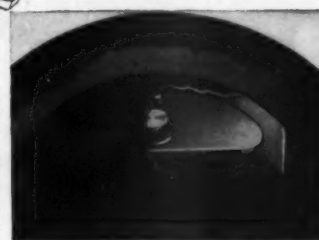
Royal Purple Model

Think of it! A draft control that's absolutely impregnable to soot, carbon, corrosion and dust . . . one that will give years of accurate, trouble-free service in spite of the most adverse operating conditions! The new Walker ROYAL PURPLE model is the first—and only—draft control with positive, all-point protection. These revolutionary improvements can't be copied or duplicated—they're exclusively Walker because of pending patents.

The Royal Purple—Hit of the Philadelphia Show

THE INSIDE STORY

The weight adjustment assembly on the ROYAL PURPLE model is sealed in by a protective housing which keeps mechanism absolutely free from dirt deposits. Untouched photo at right shows back of vane and housing after more than a year's service. Cut-away shows spotless condition of sealed-in weight adjustment assembly. Clean, corrosion-free



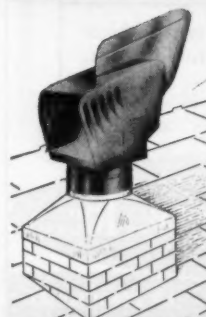
operating parts assure ease of adjustment at any time.

This front view of an actual installation shows location of pivot pins which control vane movement. Notice how they are located on front face of damper and set back, away from edge. Box-type hinges completely seal delicate knife-edge pivots, keeping them clean and sensitive even after years and years of service.

For complete details on this sensational new development in draft control, see your jobber or write Walker Manufacturing and Sales Corporation.



Another Outstanding Walker Development **VENTURI-TOP CHIMNEY CAP**



Ideally suited for both heating and ventilating applications, the Venturi-Top Cap can be used with gas, oil or coal-fired heating systems. Directional vane keeps throat of vent facing into wind for maximum draft control. Sloping-throat design prevents back drafts and actually increases draft effectiveness of wind stream by constricting it as it passes over chimney opening. Unit rotates on a friction-free, ball-bearing patented pivot. Bushing is self-lubricated and sealed against dirt, moisture and corrosion. Streamlined design is both attractive and functional—a combination which makes it a favorite with today's architects.

Walker Manufacturing and Sales Corp.

1730 Penn St.

St. Joseph, Mo.

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**Gas-Fired and Oil-Fired
Furnaces and Air Conditioners**

COMPLETE LINE — size ranges from 75,000 to 150,000 B.T.U. output at bonnet.

COMPLETE PACKAGE UNITS — factory wired, assembled and tested — ready to install.

10 YEAR WARRANTY — on both the combustion chamber and heat exchanger.

MAXIMUM HEAT TRANSFER — assured by high efficiency 12 gauge steel heat exchanger.

UL FULLY APPROVED — and acceptable by both F.H.A. and V.A.

SALES AND ENGINEERING ASSISTANCE — to help you land the sale, to help you with your installation problems.

COMPETITIVELY PRICED — every unit priced to sell quickly at a good profit.

Exclusive distributor and dealer franchises are available in certain desirable areas. Inquiries are invited.

WRITE FOR FULL INFORMATION

LINCOLN FURNACE Co., Inc.

MANUFACTURERS OF GAS & OIL FURNACES - AIR CONDITIONERS

230 Goffle Road • Hawthorne, N. J.

new literature

(Continued)

62nd St., Cleveland 3. Sections contain general provisions for gas piping and appliance installation, requirements covering installation of specific types of gas equipment, and the venting of gas appliances. Copies are priced at 25 cents.

Ventilation Equipment

CATALOG No. 953 includes information on ventilation terminals and accessories — Marine Thermal Products, Inc., 419 Fourth Ave. at 29th St., New York 16. Line drawings illustrate diffusing, exhaust and ventilation terminals, gooseneck and mushroom ventilators, light excluding louvers and volume dampers. Sections of the catalog are devoted to equipment especially designed to withstand exposure to atmospheric conditions found near salt water.

Heating and Cooling Products

CATALOG presents data on heating and air conditioning equipment — Chase Supply Co., 546 W. 119th St., Chicago 28. Also available is a catalog, similar in design but differing in color combinations, giving complete information on refrigeration and air conditioning products.

Air Conditioning, Heating Products

AN EIGHT PAGE BUYING AND SELLING guide for wholesalers contains information and prices on asbestos and other insulating materials as well as flexible duct connections for heating, air conditioning and ventilating applications—Grant Wilson, Inc., 141 W. Jackson Blvd., Chicago 4. Specifications are given for all items together with costs to the wholesaler and recommended resale prices.

Heating and Cooling Equipment

FURNACES and air conditioning units as well as prefabricated duct and fittings are included in a 128 page catalog — The Williamson Heater Co., 3500 Madison Rd., Cincinnati 9. The catalog contains photographs, descriptions, performance and capacity charts, cross-section and cutaway drawings and standard equipment lists for the company's entire line of products. Featured are "Gasaver" forced warm air and gravity furnaces, gas conversion units and air-cooled and water-cooled air conditioners for use in connection with existing heating systems or as independent units.

Baseboard Heating, Cooling Diffusers

FORM P-255 presents information on "Perim-O-Therm" baseboard heating and cooling units for new or old home installation — Flangeklamp Corp., 80 Leslie St., Buffalo 11. The diffusers can be used in any type house

construction — full basement, slab, or crawl space — as well as many commercial installations. Slip lock construction is designed to facilitate installation.

Press Brakes

EIGHT PAGE FOLDER illustrates and contains specifications on "Semco" steel press brakes and forged steel press brake dies. Standard brake dies up to 12 ft may be ordered from the folder — Service Machine Co., Inc., 716 Miller St., Elizabeth, N. J.

Residential Heating Systems

POCKET SIZE BROCHURE explains different types of heating systems to prospective purchasers of residential heating plants — Perfection Industries, Inc., 7609 Platt Ave., Cleveland 4. Entitled *If It's Comfort You Want*, the booklet traces the history of residential heating in America and tells the prospective buyer what to look for in a heating plant.

Gas Fired Duct Furnaces

FOUR PAGE BULLETIN (No. 855) outlines the use of gas fired duct furnaces in heating, ventilating and air conditioning systems. Modine Mfg. Co., 1580 DeKoven Ave., Racine, Wis. The booklet explains how the use of stainless steel in the construction of the heat exchanger and burner eliminates the problem of corrosion caused by condensation when the furnace is used with packaged air cooling equipment. Drawings show how the unit can be used in various types of applications.

Heat Pumps

DATA SHEET presents information on WT44C and WT66C "Weathertron" packaged air-source heat pumps — General Electric Co., Air Conditioning Div., 5 Lawrence St., Bloomfield, N. J. According to the company, the new models offer improved performance due to a more effective relationship between heating and cooling capacity. Key factor in the improved heating-cooling ratio is a modulated hermetic motor-compressor designed specifically for heat pumps.

Patterned Metal Sheet and Strips

PATTERNED SHEET and strip metal is described in a four page illustrated folder — Rigidized Metals Corp., 777 Ohio St., Buffalo 3. Forty standard patterns are available and special designs can be engineered to meet specific requirements.

Hole Punching and Notching

CATALOG covers sheet metal machines for punching, notching and contour shearing — Wales-Strippit Corp.,

SAVE TIME and MONEY when you form FLEXIBLE CONNECTORS

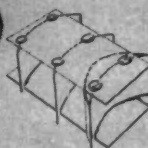


ELGEN SILENT DUCT

*Pat. Pend.

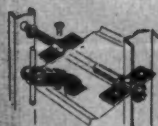
Imagine, this one-piece, factory-assembled metal-to-material unit unrolls absolutely flat! No more bothering with unwieldy duct material that buckles easily. Elgen Silent Duct makes on-the-spot work a cinch . . . you just measure and cut. You can fabricate any type of flexible duct connector in minutes . . . with half the effort! You can save up to 60%! No more worry about an inventory of "made-up" parts, either. Your choice of U.L. approved, (Gov't. Spec. Mil-D-10860) canvas, Johns-Manville asbestos and U. S. Rubber neoprene coated fibre glass, in 3" or 6" widths attached to 24 or 26 gauge galvanized steel or 24 gauge aluminum to fill every job requirement. All available in handy-to-use 25, 50 or 100 foot rolls.

2 More Elgen Products That Put Profits In Your Pocket!



ELGEN ALL-TITE VANE RUNNER

• Quickest and easiest way ever devised for installing turning vanes for square elbows • No special tools required; vanes lock easily with blow of hammer



ELGEN DAMPER SET

For Multi-Blade Dampers . . . Parallel or Opposed • Most perfect damper hardware developed • Assembles in a jiffy . . . cuts assembly time in half • Easily adjusted and self-aligning. Licensed by Minneapolis-Honeywell

**ELGEN PRODUCTS ARE SOLD THROUGH
LEADING JOBBERS EVERYWHERE.**

"Put Profits In Your Pocket!"

Write today for free catalog and "spec" sheet! Dept. A-3

ELGEN MANUFACTURING CORP. 41-34 39 Street, Long Island City, N. Y.



new literature

(Continued)

345 Payne Ave., North Tonawanda, N. Y. Illustrated throughout, the catalog details features of the units and shows equipment in operation. Also described are the company's engineering and template drilling services.

Inert Gas Welding

THE PERFORMANCE and applications of a new consumable electrode inert gas welding process — "Westing-arc" — are given in a seven page booklet (Form B-6525) — Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30. Descriptions of fillet, lap, butt and plug welds made with the process are accompanied by photos. Weld cross sections are also shown. The booklet points out how the arc stability of the process affects operating costs in terms of gas consumption and time required for cleaning.

Air Cooled Condensing Units

DATA ON AIR COOLED condensing units and condensers is given in specification sheets C-1100-S92 and C-1100-S93 respectively — Worthington Corp., Harrison, N. J. Outlined in the two sheets is information relative to features; general specifications on operation, construction, condenser coil and fans; dimensions; and

duct connection sizes. The condensing unit is intended for use with remote duct cooling coils and can be used with duct coils for a complete air conditioning system when hooked up to an existing forced warm air heating system.

Brazing Methods

BRAZING MANUAL (24 pages) covers the application of the major brazing methods in joining metals using silver alloys and filler metals, fluxes and gas atmospheres — Air Reduction Sales Co., 60 E. 42nd St., New York 17. Subjects discussed include silver brazing procedure, selection of brazing and filler metals, design of brazed joints, prebrazing cleaning, assembly of brazed joints and others. Request catalog 925.

Year 'Round and Summer Cooling Units

FOUR PAGE CIRCULAR (RP54-25000) covers residential year 'round air conditioners and cooling units which may be used in conjunction with existing heating systems — Clime-Matic Corp., Connecticut & Richards Ave., South Norwalk, Conn. Also described is a gas fired horizontal furnace. A second circular (CP54-25000) illustrates and describes air conditioners for small commercial installations, including self-contained models, units requiring ductwork and units designed for installation on wall or ceiling.

EMPIRE TURBINES FOR POSITIVE VENTILATION

*The Largest Selling
Turbine Ventilator
In The New York Area
For Over A Decade*



SOLD THRU LEADING WHOLESALERS
SEE YOUR JOBBER

"AS IT ROTATES - IT VENTILATES"

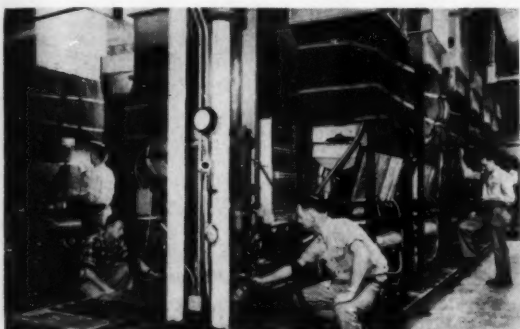
EMPIRE VENTILATION EQUIPMENT CO.

35-39 VERNON BLVD
Long Island City 6, N. Y.

we hear that...

► **WILLIAM C. DE ROO** has resigned as products engineer in charge of engineering of the Hart & Cooley Mfg. Co. and plans to devote full time to his real estate business, De Roo Realty Co. Mr. De Roo's resignation was effective April 1.

► **GILBERT W. DENGES**, vice president of the Williamson Heater Co., has been named manager of research, engineering and product development. Mr. Denges was formerly jobber department sales manager, in which capacity he is being succeeded by Gustave Leytze, also a vice president of the firm.



CAPACITY performance testing area for air conditioning equipment on the Westinghouse Electric Corp.'s assembly line at Staunton, Va.

► **THE WESTINGHOUSE Electric Corp.**'s air conditioning plant at Staunton, Va. is now producing packaged equipment on all five conveyer lines. Line one assembles commercial self-contained 3, 5 and 7½ hp units, line two produces residential cooling add-on packages in 2, 3 and 5 hp sizes. Line three is for 10 and 15 hp commercial units, line four is for 3 and 5 hp heat pumps and 2 and 3 hp combination heating and cooling units. Line five is where compressors and complete condensing units for remote installations are produced. All equipment is given performance tests while on the conveyer line.

► **THE FRANK J. KERSCHER Co.**, Manitowoc, Wis. recently held a dealers' sales meeting featuring a color movie on baseboard diffuser applications and installation procedures. Speakers included Rheo R. Riopelle, company engineer, who presented engineering data on air distribution; Vincent J. Kersch, sales manager; and Jim Miner, Harold Burke & Associates. About 125 dealers from the northern Wisconsin and northern Michigan areas attended the meeting.

► **THE AIRTEMP DIVISION**, Chrysler Corp., plans to increase production to meet added market demands of the Southwest. Carl E. Buchholzer, president of the



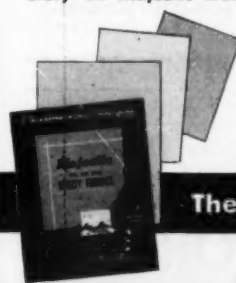
Majestic gives you FULL HELP...plus a full line of summer and winter air conditioners

From start to finish, Majestic affords its dealers all possible assistance . . . from sales helps to assembly instructions and engineering data. The complete facilities of Majestic are always available to each individual dealer.

Knowledge gained in nearly 50 years of manufacturing all types of heating equipment has been placed at the disposal of Majestic dealers in the form of sales, service, and installation tools of every description. Majestic's engineering department is ready at any time to help on layouts or to give complete technical counsel.

A complete line of automatic warm-air furnaces—gas or oil-fired—is manufactured by Majestic. Summer cooling equipment can be had with any of these furnaces to meet the growing trend for year-around air conditioning—from the smallest 72,000 BTU model for small homes, up to the 400,000 BTU model for commercial buildings and large residences.

IF YOU ARE INTERESTED in a bigger profit, vitalized "Full Help" merchandising program, write for the full story on Majestic franchise and dealer cooperation.



Send for Bulletins...

and learn about the many valuable features of Majestic's easy-to-sell heating units.

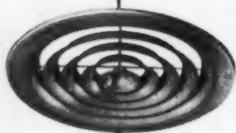
The Majestic Co., Inc.

394 ERIE STREET
HUNTINGTON, INDIANA

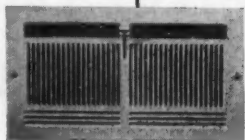
ceiling... floor

...or anywhere between

Better Diffusion



Standard Registers
*shape comfort,
aim it,
diffuse it evenly*



Ceiling to floor, there's a Standard Register or Diffuser for a better job of shaping, aiming or spreading conditioned air. For ceiling outlets, two Standard Ceiling Diffusers—with flush or extended louvers—send warm or cool air to every corner evenly. (Also dampers and installation rings.) And for positive control of warmed air from the floor, there's the Standard Perimeter Floor Register with exclusive dialomatic control. Select the exact diffuser, register or grille for virtually any air-directing job from the full Standard line.



**MAKE REGISTER, DIFFUSER
SPECIFYING EASIER**

Write for the Standard Register
and Grille Catalog now!

Standard Stamping & Perforating Company
Dept. AA-5
3137 W. 49th Place, Chicago 32, Illinois
Please send me your catalog No. 54, on Registers and Grilles.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

Standard

**STAMPING
& PERFORATING
COMPANY**

3137 W. 49TH PLACE, CHICAGO 32, ILLINOIS

we hear that

(Continued)

division, reports rapid growth in the demand for air conditioning — particularly air cooled systems — in various sections of Texas, Louisiana and Oklahoma which he recently visited. J. F. Knoff, vice president in charge of sales, states that the sale of the company's air cooled units in the first quarter of 1955 showed an increase of 84 percent over a similar period in 1954.



MEMBERS of the sales planning board of the Herbster Products Co. recently held their first meeting to discuss company sales policies

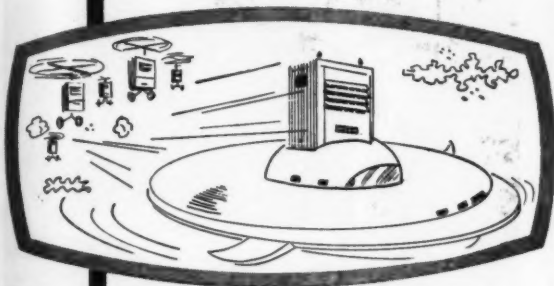
► A SALES PLANNING BOARD has been formed by the Herbster Products Co. to act as a steering committee on sales policies for the firm. The new board includes heating dealers as well as company executives so that both management and contractor experience can be utilized in formulating sales plans.

► DEALERS of the Hall-Neal Furnace Co. met recently to review company products and discuss sales plans for the future. Fred S. Boone, president, made the speech of welcome, and new products were discussed by members of the sales and engineering staff. Speakers included Tom Williams and Cornell Bodell of the Hall-Neal company and T. H. Smoot, vice president and sales manager for Primor Products, Inc.

► THE STRAUS-FRANK Co. has been named a wholesaler of residential air conditioning equipment in the Dallas and north Texas area by Worthington Corp.

► SOME 300 DEALERS and distributors for Peerless Furnace and Foundry Co. and Round Oak Co., Inc. met recently in Indianapolis for their second annual two-day national air conditioning conference. Both selling techniques and product knowledge were emphasized. The dealers were given a preview and actual demonstration of the new line of air conditioning units, with special attention being given to "Clima-Twin-

FIRST
in sales
FIRST
in dealer profits



FIRST in
gas heater engineering, too

In 1954 it was the *first* twin-fan, 250,000 BTU gas unit heater. Already in 1955 Reznor engineers have given you the *first* sectional duct furnace.

We can't predict what will come next—or when. But several exciting projects are underway in the Reznor product development laboratory right now.

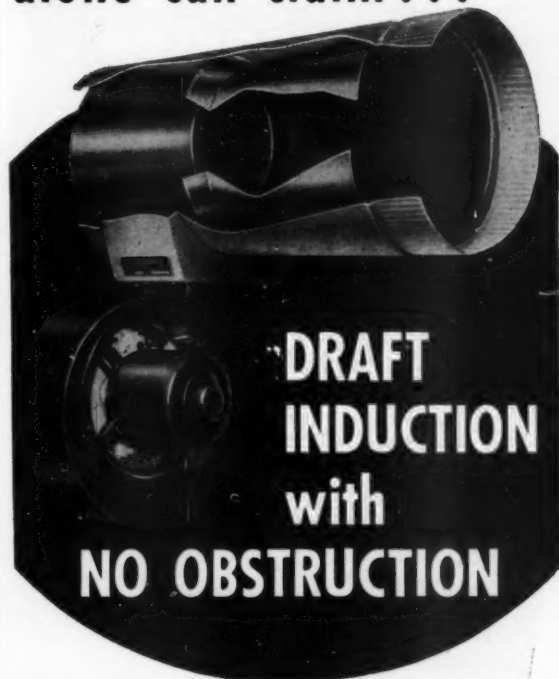
Engineering leadership helps explain why Reznor is the world's largest-selling gas unit heater. Better heaters are easier to sell. Reznor's alert, aggressive product development program is one of the reasons why you can make more money selling Reznor heaters.

If you're interested in making more money, you'll want to hear the rest of the Reznor story. Drop us a line today and we'll see that you get all the facts.

Reznor Manufacturing Company,
53 Union Street, Mercer, Pennsylvania



This X-Ray View shows
why **quickdraft**
alone can claim...



Patents are pending on the exclusive features of *quickdraft* which produce all the draft you need without obstructing smokepipe or flue. And we mean no obstruction—ever!

The Venturi system, which acts as an aspirator, sets up no obstruction to flow of flue gases. No moving parts to corrode or collect soot, no bearings exposed to heat or flue gases.

It's hard to believe, but true—the shorter the chimney, the better the draft with *quickdraft*. So, get all the facts. You'll want to use *quickdraft* on your next job. Write for complete literature, installation manual and name of nearest jobber, to Quickdraft Company, Dept. P, 1150 So. Erie Blvd., Hamilton, Ohio.

quickdraft
DRAFT CREATOR



**HAVE YOU
A DESIGN
PROBLEM**

Involving
**FUNCTIONAL
OR
DECORATIVE
HARDWARE**

**LET OUR EXPERIENCED DESIGNERS
WORK WITH YOU IN CREATING
MODERN, QUALITY HARDWARE...
ENGINEERED TO COST YOU LESS**

- National Lock's broad experience in designing and manufacturing custom and standard appliance hardware can be put to use for you. Our research development engineers will work independently or with your own designers in solving your particular hardware problems.

- This service includes zinc die casting, stamping, compression and injection plastic molding. Write us for complete information.

**LATCHES, PULLS and HANDLES
LID and DOOR HARDWARE
CASTERS and GLIDES
BUTTS and HINGES
CABINET LOCKS
FASTENERS**
(regular and special)



NATIONAL LOCK COMPANY
ROCKFORD, ILLINOIS

we hear that

(Continued)

Zone" and "Clima-Twin-Aire" models. Professor Herbert Gilkey, University of Illinois, presented a report on air conditioning application research which has been carried on at the university and Professor William Miller of Purdue University discussed the sizing requirements on conversion cooling applications.



W. L. SNELTJES (*left*) manager of home heating and cooling modernization sales for General Electric Co., discusses the company's new sales training program with Montclair, N. J. dealer Carl Zimmerman

► TO MEET THE NEED for better retail salesmanship, the Home Heating and Cooling Department of General Electric Co. has developed a packaged sales training program for its dealer organization. According to W. L. Sneljtes, the department's manager of modernization sales, this program enables distributors to conduct their own training meetings for dealer salesmen with sufficient flexibility to meet individual needs. The program is built around a visual presentation which serves as a classroom training manual as well as an actual selling tool. The presentation is 168 pages in length and contains an illustrated sales story in color on each of the company's six home heating and cooling product lines.

► F. W. DWYER MFG. Co. has started construction on its new plant in Michigan City, Ind. which will house both plant and general offices. The new plant, scheduled for completion in July, will provide increased facilities for the production of draft gages, manometers and other instruments manufactured by the company.

► THE DURO-DYNE CORP. recently issued the first copy of its monthly house organ *DD Doings*. The first issue featured an article on the recent International Heating, Ventilating and Air Conditioning Exposition and a description of the company's new "Neva-Bind Duro-Blade" kit. Regular features will be short descrip-

NEW HOPE in the battle against CANCER

THE FIGHT against man's cruellest enemy is far from won. If present rates continue, 23 million living Americans will die of cancer—230,000 *this year*. And thousands of these will die needlessly—through cancer that could have been cured if treated in time.

ALL THE SAME, there have been victories. Thousands who once would have died are being saved—thanks, in part, to your donations to the American Cancer Society.

AND, LAST YEAR, the Society was able to allocate \$5,000,000 of your donations to research aimed at finding the ultimate cure for *all* cancer. That's more money than ever before.

MUCH MORE, of course, remains to be done. So please make *this year's gift* a really generous one!

Cancer

MAN'S CRUELEST ENEMY

Strike back—Give

AMERICAN CANCER SOCIETY

FOR FLEXIBLE CONNECTIONS IN

- DUST COLLECTION ● FUME CONTROL
- AIR-CONDITIONING ● MATERIALS HANDLING

PORTOVENT® ◀◀ USE ▶▶ FLEXAUST®

Spiral wire reinforced

DUCT



Sizes 3" to 36" ID Wide
Pitch type RETRACTABLE

Flexaust hoses and Portovent ducts are made with strong cotton or nylon fabrics, impregnated and coated with neoprene compounds. Seams are fully bonded. Other important features are—

- ✓ EXTREME FLEXIBILITY
- ✓ AIRTIGHT — STRONG
- ✓ LIGHTWEIGHT — DURABLE
- ✓ VERY EASY TO HANDLE AND INSTALL

STOCKS IN PRINCIPAL CITIES

Spiral wire reinforced

HOSE



Sizes 1 1/4" to 36" ID
Close pitch type

WRITE TODAY FOR

- Bulletin #40 — General information
- Bulletin #41 — Accessories and installation data
- Bulletin #42 — Technical data on products and service.
- Bulletin #43 — Application data and type selector guide.
- Bulletin #44 — Friction loss data.
- Prices lists.

THE FLEXAUST COMPANY, Dept. AA-5

100 PARK AVENUE

NEW YORK 17, NEW YORK

Wisconsin BURNERS



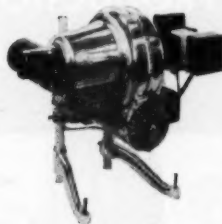
MODEL O



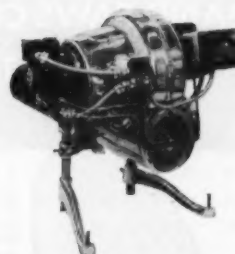
MODEL A



MODEL B-41



MODEL B-51



MODEL B-61

• A complete line... with Wisconsin Burners you can offer your customers a choice of 5 sizes... from 0.65 G.P.H. to 25.00 G.P.H.

• Every Wisconsin Burner is factory tested under actual firing conditions. Their reputation for quality has made them a leader in the field.

• Available with the famous, efficient Shell Combustion Head.

FOR INFORMATION ON AVAILABLE TERRITORIES, WRITE

WISCONSIN OIL BURNER CO.

2720 EMIL ST.

MADISON 5, WISCONSIN

tions of the "Representative of the Month" and the "Distributor of the Month." Those wishing to receive the publication regularly may send their requests to Duro-Dyne Corp., 800 Third Ave., New Hyde Park, N. Y.



DEALERS from the Philadelphia area and parts of New Jersey attended the recent school on Chrysler Airtemp air conditioning equipment conducted by S. S. Fretz, Inc.

► DEALER REGISTRATION at the ninth annual air conditioning school conducted by S. S. Fretz, Inc., Philadelphia wholesaler, in cooperation with the Airtemp division of Chrysler Corp., reached a total of 122 — a 100 percent increase over the previous year's enrollment.

ment. The school — of eight weeks duration with two hour classes held every Monday night — featured several sessions on air cooled air conditioning.

The division reports that the recent five day school held in Seattle by the American Heating Equipment Co. attracted dealers from cities as distant as Fairbanks, Alaska. Others came from Great Falls, Mont., Salt Lake City and Springfield, Ore., as well as from the Seattle area.

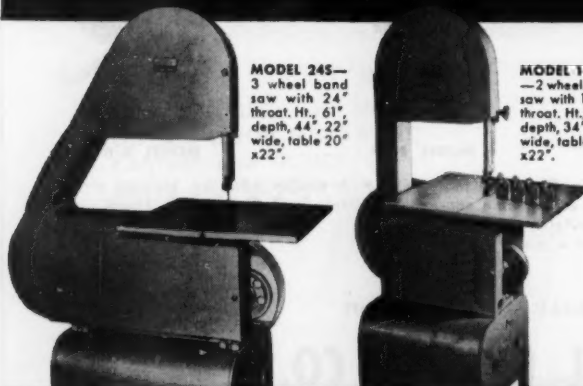
► A FOUR-YEAR, tuition paid scholarship to study electrical or mechanical engineering at Carnegie Institute of Technology is being offered by the Robertshaw Research Center, Robertshaw-Fulton Controls Co. The scholarship, which has an estimated value of \$2820 plus a \$100 cash prize for the winner, will be awarded to an outstanding high school senior from Westmoreland County, Pa.

The company reports that 1954 was the fifth consecutive year in which its sales reached a new high. According to John A. Robertshaw, president, "company facilities were expanded, new products were introduced, research activities were intensified and a program of foreign operations was instituted."

► THE SCAIFE Co. of Pittsburgh has purchased the Timken-Silent Automatic division of the Rockwell Spring and Axle Co. T. A. Crawford, for many years

Save Costly Labor Hours

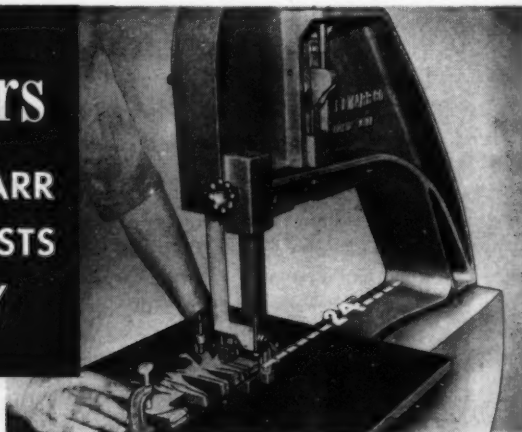
AMAZINGLY LOW-PRICED BETT-MARR
BAND SAWS CUT PRODUCTION COSTS
—PAY FOR THEMSELVES QUICKLY



MODEL 24S—
3 wheel band
saw with 24"
throat. Ht., 61",
depth, 44", 22"
wide, table 20"
x22".

MODEL 14SM
—2 wheel band
saw with 13½"
throat. Ht., 62",
depth, 34", 22"
wide, table 20"
x22".

Both Bett-Marr Models are especially designed for stacked sheet metal cutting. They have quickly adjustable blade speeds from 100 to 3000 FPM for cutting metal, wood or plastic without blade chatter. Perfect blade control assures smooth radius and straight line cuts. Blade cannot slip off wheel in operation. Cuts iron, bronze, copper, steel castings and forgings, wood, plastics, and stainless steel.



Rugged 3-Wheel Saw Has 24" Throat —Cuts 50 to 70 Stacked Sheets

Model 24S Bett-Marr will make center cuts on sheets up to 48 inches wide. It's big enough to do most any job—small enough to fit most any space—and costs much less than any comparable saw.

Low cost—2-Wheel Saw Out-performs Saws Costing 6 Times As Much.

Model 14SM Bett-Marr has a 13½" throat and will do everything its big brother will do, except accommodate the larger sheets. A Bett-Marr can help you produce ductwork pieces 6 to 12 times faster than by hand.

WRITE FOR INFORMATION OR ASK YOUR DISTRIBUTOR
BETT-MARR MFG. CO.
HOPKINS, MINNESOTA

FLEXIFLO

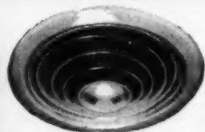
THE DIFFUSER WITH A BUILT-IN VOLUME CONTROL

FLEXIFLO adjustable air diffusers reduce installation costs by providing for rapid, easy adjustment of air volume and pattern after installation by simple knob adjustment.

Engineering is simplified since the FLEXIFLO's wide range of adjustability provides wide latitude in selecting the correct size diffuser.

FLEXIFLO diffusers assure uniform air distribution with built-in equalizing deflectors which are easily adjustable after installation. Rapid draftless mixture of supply and room air is assured.

FLEXIFLO diffusers for every cooling, ventilating and heating need are made in 12 standard sizes, up to a capacity of 12,000 CFM.

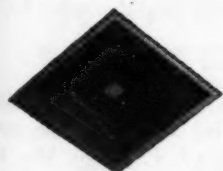


FOR COOLING

TYPE R—Air travels in a constant pattern parallel to the ceiling regardless of volume adjustment.

FOR COOLING & HEATING

TYPE V—Air diffusion pattern and volume are fully adjustable, after installation.

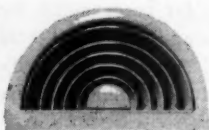


SQUARE

TYPE H—Fully adjustable square diffusers and fixed rectangular 2, 3, and 4 way diffusers.

FOR SIDEWALL & CEILING

TYPE S—With Type R or V blades to supply desired air pattern for ceiling or wall installation.



FLEXIFLO

Write for technical data catalog on Flexiflo line

Universal Diffuser Corp.

1350 Garrison Ave. • New York 59, N. Y.

NEW



HEATING-COOLING UNITS to double your sales volume



OIL OR GAS
HEATING

PLUS

WATER OR AIR
COOLING

New Sun Fuel-Master heating units are now available in 25 types and sizes . . . all the ultimate in design and engineering efficiency . . . proved by 55 years of heating experience. Oil burners bear approval of Underwriters' Laboratories. Gas burners approved by American Gas Association Laboratories. Each unit carries the famous Sun 20-year guarantee.

Sun engineers have developed an exclusive, highly-efficient design for water cooled air conditioning . . . the result is a new line of 2, 3, and 6-ton compressor cooling units that cut water and electrical costs up to 20%. And where water cost or supply is a problem, new Sun Air-Cooled condensers may be used. They are available in 2 and 3-ton capacities.

... write today for complete details on these new, low-cost SUN combination units

J. V. Patten Company

SYCAMORE, ILLINOIS, U.S.A.

ESTAB. 1898 • INC. 1928

FALLSINGTON

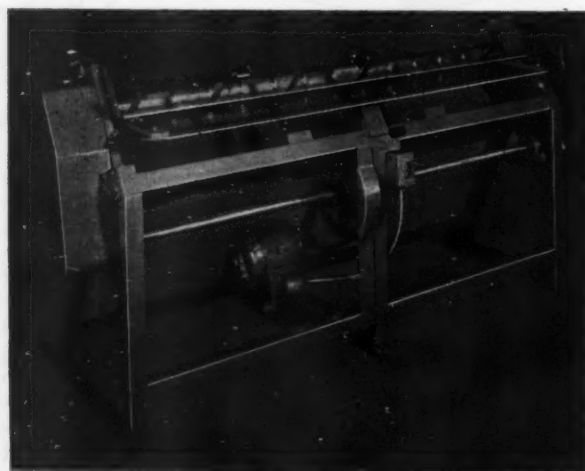
Sheet Metal Machinery

DESIGNED FOR THE PRACTICAL SHEET METAL MAN



FALLSINGTON'S NEW BACK GEARED HUSKY PRESS

- LARGE BED AREA WITH OPEN BACK
- HIGH VERSATILITY AT MODERATE COST
- AVAILABLE IN 36"— 48"— 60" LENGTHS
- ALL WELDED CONSTRUCTION WITH CHAIN & GEAR DRIVE
- DESIGNED FOR USE IN SMALL & LARGE SHOPS



FALLSINGTON'S NEW 5' PIPE ROLLING MACHINE

- ROLLS WITHOUT DAMAGE TO THE PIPE LOCK
- CAPACITY: 26-30 (gauge), 4" to 12" (diameter), 2' to 5' (length).
- ALL ROLLERS ARE GEAR DRIVEN
- EASY TO OPERATE

Literature will be sent on request to explain the operation of these two new Fallsington machines.

FALLSINGTON MANUFACTURING COMPANY

Manufacturers of Sheet Metal Machinery and Tools
FALLSINGTON PENNSYLVANIA

we hear that

(Continued)

associated with the Timken-Silent Automatic division, will join the Scaife company as vice president in charge of sales for the heating division.

► R. JAMES TRANE, Wayne J. Hood and Thomas J. Hancock have been elected executive vice presidents of the Trane Co. Richard H. Pearse, Sr. was elected to the position of vice president. Mr. Hancock was also named to serve on the board of directors. Both Mr. Trane and Mr. Hood have been on the board for several years.



REPRESENTATIVES of the German heating and ventilating industry inspect the plant and products of the Auer Register Co.

► REPRESENTATIVES from several German heating and ventilating firms recently visited the plant of the Auer Register Co. where they discussed the design and manufacture of heating and air conditioning grilles, registers and related products with George Metzger, president of the Auer company. The men visited several concerns in the Midwest and East under the Foreign Operations Administration technical exchange program.

The company reports that its diffusers were featured in the perimeter heating system in an all-gas equipment model home in the Cleveland area sponsored by the Ohio Fuel Gas Co.

► ALL PATENTS, PATTERNS and rights are available for licensing on three heating and winter air conditioning units designed by the J. P. Glasby Mfg. Co., Inc. The units include a winter air conditioning model for basementless homes, one for semi-basement homes and one for full basement homes. All feature a patented fan scroll space blower built into the upper part of the combustion chamber.

► CARRIER CORPORATION's air conditioning training program, designed to boost dealer sales in 1955, is being enthusiastically accepted by dealers throughout the country. More than 3500 dealer representatives have already attended the courses, which are conducted by company distributors. Classes have been held thus

Satisfied Customers Prove:



ALTON Low-Cost Coolers are Best for High Dealer Profits!

Summer business problems evaporate when you sell ALTON Low-Cost high-profit air washers! Satisfied customers are proof of ALTON salesability.

Rose Iron Works, Cleveland, Ohio, writes, "Our problem was three-fold . . . exceedingly high temperatures in the forge area . . . fumes from the gas forge furnaces . . . high temperatures in the balance of our shop. Since we had the unit installed, blacksmiths are able to work in the high humid hot days in comfort . . . the flow of air has overcome the fumes."

Griffin Hosiery Mill, Griffin, Georgia
Low-Cost cooled with: 18 ALTON coolers - 177,000 cfm.

Yes, ALTON airwasher type evaporative coolers have proven themselves in the heavy industries . . . and even in laundries and dry cleaning plants! "Since buying our first Alton cooler, we have purchased no other brand. It requires far less maintenance, and has a longer life." Writes the White Star Laundry, Dallas, Texas.
Only ALTON has all of these superior features: AQUA-SPRAE, LATEX FILTERS, (two sets), SQUIRREL-CAGE BLOWER, ALL-WEATHER CONSTRUCTION.



Get the facts today, on superior ALTON coolers, and guarantee yourself high profits this summer!

ALTON MANUFACTURING COMPANY

1112 Ross Ave., Dallas, Texas

Please rush information on ALTON high-profit coolers.

NAME _____

COMPANY _____

ADDRESS _____

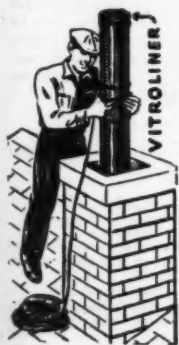
CITY _____

STATE _____

VITROLINER CHIMNEY LINER

IN WRITING FOR 10 YEARS

to give effective and continuous service. Any material for replacement will be furnished without charge during this period.



Ideal for Gas or Oil Heating Plants

Modern heating equipment is so efficient that practically no heat is wasted by exhausting high temperature flue gases. These flue gases have a chance to condense before they are exhausted out of the chimney. This condensation contains acids which attack the mortar and brickwork of the chimney.

WHEN VITROLINER IS INSTALLED IN THE CHIMNEY, THE PRODUCTS OF COMBUSTION ARE VENTED INSIDE THE LINER AND DO NOT TOUCH THE BRICKWORK.

You can establish a steady year 'round business installing Vitroliner Chimney Liners. Our distributors can keep you supplied in all sizes, quickly and efficiently. Installation is easy and takes only a few hours.

Recommended by leading gas companies and oil burning equipment manufacturers.

ASK ABOUT OUR INSULATED FLUES!

Certificate of Quality
for Vitroliner Chimney Liner

is Guaranteed

VITROLINER
-the Superior Vent Pipe-

- ELIMINATES FIRE HAZARDS
- CREATES BETTER DRAFT
- REDUCES FUEL CONSUMPTION
- PREVENTS CONDENSATION DAMAGE
- ASSURES LONGER LIFE

CONDENSATION
ENGINEERING CORPORATION
1420 MAC AVE. CHICAGO 11, ILL.

Write for
circular
today.

Make Stronger Fastenings
this easy way



P-K
TRADE MARK
REG. U.S. PAT. OFF.

**Hardened
Masonry Nails**

DRIVE EASILY into mortar, cinder blocks, and other soft masonry without pilot holes . . . into pre-drilled holes in harder materials.

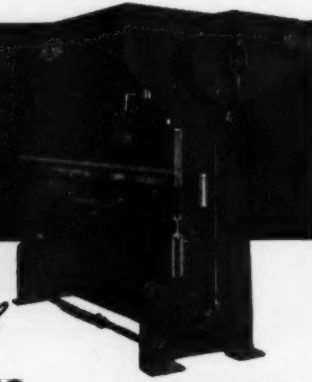
HARDNESS and TOUGHNESS perfectly balanced . . . they drive in straight to stay tight, even under shock or vibration.

COST YOU LESS and are much simpler to use than plugs, expansion bolts, other devices. Samples free . . . try them. Ask your P-K Distributor, or write: Parker-Kalon Division, General American Transportation Corporation, 200 Varick St., New York 14.

**PARKER-KALON®
FASTENERS**

**SHEET METAL and
PLATE WORK**

*Bending,
Forming, Notching,
Blanking,
etc.*



CHICAGO Steel

PRESS BRAKES

Series A Light Duty Model
CHICAGO Press Brake

In the almost limitless variety of operations on sheet metal and steel plate, CHICAGO Press Brakes are well known for their consistent production performance. The proved all-steel construction and the flexibility of design in all models offer a versatility that is hard to beat. With 42 standard sizes, there is a CHICAGO steel press brake to suit your requirements.

Full Particulars and Recommendations
for Any Job on Request

DREIS & KRUMP
MANUFACTURING COMPANY

7404 S. Loomis Blvd., Chicago 36, Ill.

CHICAGO
STEEL BENDING BRACKES
AND ALL KINDS OF
PRESS BRACKES

we hear that

(Continued)

far in Jersey City, Pittsburgh, Savannah, Ga. and Washington, D. C., and others have started in Charleston, W. Va., Peoria, Ill., St. Louis, Los Angeles and other cities.

John M. Bickel, vice president of the Unitary Equipment division, reports that a new warranty program guaranteeing long life for packaged air conditioning units has been developed by the company. The firm now guarantees the major heating components in its "Home Weathermaker" units for 10 years and the complete cooling cycle for five years.

► **METROMATIC MFG. Co.** has moved into new and larger quarters at 15 Winchester St., Medford, Mass. Reason for the move is that more space and additional manufacturing facilities were required to meet stepped up production schedules.

► **THOMAS A. COLLINS** has been elected vice president and assistant general manager of the newly-formed L. O. F. Glass Fibers Co. Francis H. May, Jr., has been named vice president, secretary and treasurer, and J. M. Johns is vice president and director of sales. Joseph S. Finger is vice president and general manager of the Corrugulux division and Raymond W. Capaul



**TIME SAVING
E-Z-ON
DAMPER REGULATORS
PERMIT
INSTANT ASSEMBLY**

(Shown— head piece of #27 E-Z-ON)

**It's the little things that
make the Big difference!**

Advanced design of E-Z-ON damper regulators permits on-the-job Assembly with only a hammer — no drilling — no rivets. This 16 gauge steel regulator is simply positioned on the damper by sliding it over the scribed center line. The E-Z-ON accurately stays in position until a hammer blow drives the sharp prongs through the damper (E-Z-ON prongs will pierce 22 gauge metal.)

E-Z-ONS PROVED MORE PROFITABLE

Job Histories prove that your apprentice or journeyman can save two-thirds of their damper makeup time with E-Z-ONS.

M. A. GERETT Corp.
724 W. Winnebago, Milwaukee, Wis.

Stocked in CANADA by
THERMIDAIRE CORP.
7-9 Cumberland Street, Toronto

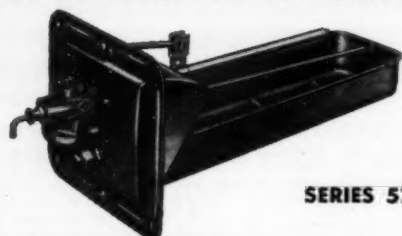
STYLE & SIZE
Famous E-Z-ON standard
Design No. 27
Solid end tail piece, threaded
head piece and wing nut —
3/4" bearing.
Superior E-Z-ON
"Snap-Tite" Design No. 29
Tail piece with retractable
snap end bearing, threaded
head piece and wing nut —
3/4" bearing.

becomes vice president and sales manager of the General Products division. Vice president and sales manager of the Textile division is Clinton F. Hegg. Dominick Labino is vice president in charge of glass research and new product development. John A. Morgan becomes vice president and general manager of the western division and Jesse H. Plummer vice president in charge of manufacturing, engineering and development.

► **TWO EXECUTIVES** of the Armstrong Furnace Co. — George Zimbelman, western division sales manager, and Lou Feeney, air conditioning sales promotion engineer — were guest lecturers at Iowa State College during a recent four day short course in heating and air conditioning. Subject of Mr. Zimbelman's talk was *How to Correct Pop, Float, and Lift Out of Gas Furnaces*. Mr. Feeney's talk was titled *Taking the Mystery Out of Air Conditioning*.

► **THE BUSSEY SUPPLY Co.** of Lewisburg, Pa. recently conducted a service and product meeting attended by approximately 150 representatives of Armstrong Furnace Co., Minneapolis-Honeywell Regulator Co., Adelta Mfg. Co. and the Lewisburg Gas Co.

Vaporite
AUTOMATIC HUMIDIFIER
OFFERS QUICKEST — FASTEST INSTALLATION
ADJUSTABLE TO SLOPING OR STRAIGHT
BONNET FURNACES



SERIES 577

Stainless steel construction. Drip-feed puts just enough water in pan for fastest vaporization. Eliminates scum . . . no stagnant water pan.

Pre-assembly cuts labor time and costs. To install simply cut hole in plenum wall, slip VAPORITE in just as it comes from shipping package.

Get complete information. Write, A-5.

Automatic Humidifier Co.
CEDAR FALLS, IOWA

In to stay when you use **P-K**
TRADE MARK
REG. U.S. PAT. OFF.

Hardened Screwnails

for fastening
SHEET METAL to WOOD
WOOD to WOOD
or other fastenings
where you need
NAIL DRIVING SPEED with
SCREW HOLDING POWER

Ask your P-K Distributor for samples and the SCREWNAIL folder, or write:
Parker-Kalon Division, General
American Transportation Corporation,
200 Varick St., New York 14.

PARKER-KALON®
FASTENERS

FOR TOP PERFORMANCE . . .
SPECIFY Allen
TURBINE VENTILATORS

Accurately rated, wind-driven Allen Turbine Ventilators are doing a noteworthy air-displacing job on commercial and industrial rooftops all over the country. Ruggedly built of prime sheets of heavy-gauge coated iron, (special, non-ferrous metals also available), these almost noiseless ventilators are in stock, ready for immediate delivery to you. Throat diameters, 6 to 48 inches. Economical to install and maintain, Allen Turbine Ventilators give maximum performance per dollar spent. Another type, motor-equipped Electro-Wind Turbine Ventilator, is available for use in areas where wind velocities are not always sufficient. Engineering assistance gladly furnished. Our representatives are in most principal cities; names listed in our catalog in Sweet's Architectural File, Section 20b.

Allen Type "C" Wind-driven Turbine Ventilator

Write for catalog on complete line of roof ventilators.

ALLEN
ENGINEERED
VENTILATION

ALLEN COOLER & VENTILATOR INC.
ROCHESTER, MICH.

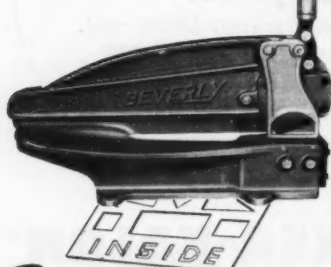
Roof Ventilators for Every Commercial and Industrial Need

BEVERLY SHEARS SAVE TIME · LABOR · MATERIAL

Make any cut—curved, straight or irregular, faster, easier and better with less material waste on a Beverly Throatless Shear. You can turn work to any position and make a clean cut as you go. Handles heavy gauges with ease—lighter metals without distortion. 4 models—capacities 18 gauge to $\frac{3}{16}$ " mild.



B-3 with
Ball Bearing
Hold Down



INSIDE SLOTTER 8" Reach—16 ga. capacity

Makes inside slotting cutting faster, easier, cleaner. Punch and die arrangement of 5 blades assures accuracy, clean cutting action. Cuts $2\frac{1}{2}$ " x $\frac{1}{8}$ " or $2\frac{1}{2}$ " x $\frac{1}{16}$ " slot at one stroke. Throat design permits pivoting work at any point in stroke for special inside cuts. Note sample cuts at left.

See your Beverly Dealer or write for illustrated catalog.

Beverly SHEAR MFG. CO.

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GRAND RAPIDS
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FURNACE
CLEANER*



You can put furnace cleaning on a money making basis by using a Grand Rapids Furnace Cleaner. High velocity suction scoops up all deposits of soot, ashes and carbon, cleaning the heating plant and re-establishing full efficiency. Special attachments clean flues, radiators, right angle turns and other hard-to-reach areas. The job is done quickly and completely. Customers are highly satisfied.

The Grand Rapids De Luxe Furnace Cleaner is also your "in" for more than cleaning profits. By checking over and inspecting the heating plant as you clean it you are in a position to make timely recommendations for new equipment or repairs. This means better service for customers . . . more profits for you.

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DOYLE VACUUM CLEANER CO.

227 Stevens St., S.W.

Grand Rapids 7, Michigan

appointments . . .

► H. N. McMENIMEN, JR. as manager-sales for General Electric Co.'s Air Conditioning division. Mr. McMenimen will continue his responsibility as north-eastern regional manager for the division, which he assumed five years ago, and will move his office from New York City to Bloomfield, N. J. A. S. Garven and Robert C. Schnetke have been appointed field representatives for the Home Heating and Cooling department. Mr. Garven will be located at Hartford, Conn., and will cover Bridgeport; Springfield, Mass.; Poughkeepsie, N. Y.; and Providence, R. I. Mr. Schnetke, formerly sales manager for the Harold E. Sweeney Corp., will work out of the Boston office and will cover the New England states. A. M. Raney, Jr. and Leonard M. Bush have been named representatives for the Weathertron department. Mr. Raney's territory includes Virginia, North Carolina and Washington, D. C. Mr. Bush will represent the department in the New England states, New York, New Jersey, Pennsylvania and Delaware.

► MEL JACKSON as sales representative in the north-western part of Indiana and part of Chicago for the Wolverine Tube division of Calumet & Hecla, Inc. Mr. Jackson will have headquarters in the division's Chicago office. He was formerly vice president in charge of sales for Grant Wilson, Inc.



Mel Jackson



Frank J. Rau

► FRANK J. RAU as sales representative in the Ohio territory for the C. A. Olsen Mfg. Co. Mr. Rau will serve wholesale jobbers and heating contractors in Ohio, Kentucky, West Virginia and western Pennsylvania. He replaces E. H. Morris, who will cover the company's Chicago territory.

► HAL H. RHEA as manager of the residential air conditioning development department for Carrier Corp. Mr. Rhea has been senior engineer in the department for the past three years. He succeeds William Hood, who has been appointed acting director of engineering for the Unitary Equipment division. Louis M. Hull has been appointed manager of new construction sales for the Day & Night division. Formerly Mr.

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SUSPENDED OR LAY DOWN FURNACES

75,000 to 240,000 BTU Capacity
Underwriter's and N. Y. C.
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Available in two models to handle 20 and 24 gauge materials. Heavier model (illustrated) can be converted to direct drive when used as independent crimper. Both machines may be adjusted to give shallow or deep crimp as desired. Regular equipment includes crimping, ogee beading rolls, plain collars, gauge, wrench and bench standard.

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The ONLY tool that does both.
A complete drive cleating tool . . .
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Quickly pays for itself in time,
material and labor savings.



No. 12 Smith's Cleat Bender

(12" wide) . . \$46.20*

No. 18 Smith's Cleat Bender

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PERFECT
DRIVE CLEATS
fit the duct without
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TREMENDOUS SAVINGS
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OIC VALVES**

LOCATION AND PRODUCTION PROBLEMS

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Burt's 53 years of experience is available to solve your ventilating problems — without obligation.

appointments

(Continued)

Hull was heating and air conditioning product promotion manager for the division. In his new position, he will assist builders and contractors in the southern California area. Craig C. Stirewalt has been named northern California sales manager for the Day & Night division. Previously he served as sales representative in the San Diego and Santa Ana areas of southern California.

► **JOHN W. BULLOCK**, formerly sales manager of the room air conditioning division for Mitchell Mfg. Co., as sales manager for room air conditioners for Servel, Inc.

► **R. J. WAALKES**, formerly with the Mechanical Engineering Department of Michigan State College, as products engineer in charge of engineering for Hart & Cooley Mfg. Co.

► **FRANK P. GIBBONS**, for the past 14 years general sales manager for the Viking Air Conditioning division, National Radiator Co., as representative for Malco Products in Ohio, part of Pennsylvania and the city of Fort Wayne, Ind. Jack Kasrel will cover the territory comprising Illinois, Indiana and Wisconsin. Mitchel Landau will cover the New England States.

► **WILLIAM T. GOLDSMITH** as national sales manager for the Delta Heating Corp. Mr. Goldsmith, formerly with the Appliance Control department of General Electric Co., will make his headquarters in Trenton, N. J.



W. T. Goldsmith



James L. Hoyer

► **JAMES L. HOYER** as national product manager in charge of air conditioning for Rheem Mfg. Co. Mr. Hoyer was formerly principal in the firm of James L. Hoyer & Associates, consulting engineers specializing in residential air conditioning.

► **W. H. CHRISTENSEN** as regional sales manager in charge of seven Pacific and north coast states for Minneapolis-Honeywell Regulator Co.'s newly formed

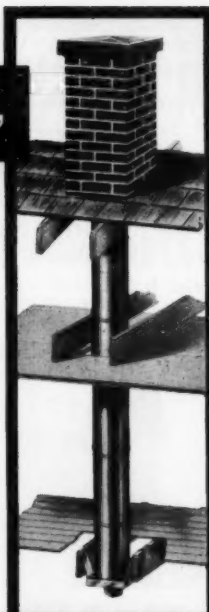
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NEW AIR-JET "BRICK BEAUTY"

Why bother to build a chimney? Now you can enjoy all the time and money-saving advantages of an Air-Jet packaged unit . . . and, at the same time, increase the value of your homes with a chimney that looks just like brick!

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Shockproof, high temperature porcelain steel smoke pipe. Special draft top guards against downdrafts. Exclusive rain groove eliminates all leakage. UL approved for use with all fuels. You can take your choice of 2 models in 3 different smoke pipe sizes.



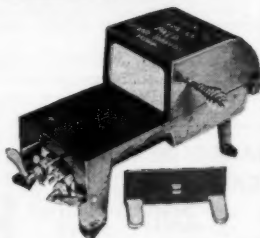
• A PACKAGED CHIMNEY WITH AUTHENTIC BRICK LOOK

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Powerful, economical BENCH FURNACES

No. 101 Bench Furnace

Today's best bench furnace for efficient heating of soldering coppers up to 12 pounds a pair plus hardening, tempering and annealing carbon steels. Blower, muffle not needed. Has baffle plate that partly closes front of Johnson patented, shaped blast-directing hood. Bottom, hood refractory lined. 2 burners. Firebox $3\frac{3}{4} \times 4\frac{1}{2} \times 5\frac{1}{2}$. \$20.80 F.O.B. factory.



No. 118 Combination Bench Furnace

Efficient all-round shop furnace. Heats largest soldering coppers, stenciling irons; tempers, heat-treats, anneals, case hardens. Hood lid removable for inserting 22 lb. pot for melting lead, tin, babbitt; side doors allow heating long rods. 3 burners. Refractory-lined firebox $6\frac{1}{4} \times 5 \times 6\frac{1}{2}$. The pot and front baffle are included. \$38.50 F.O.B. factory.



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A TOOL FOR
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NO. 1 PUNCH

Capacity $\frac{3}{8}$ " hole through $\frac{1}{4}$ " iron
Length 34". Wt. 23 lbs. Depth of throat $1\frac{1}{8}$ "
Punches and dies $\frac{1}{8}$ " to $9/16$ " by $1/64$ "



NO. 2 PUNCH

Capacity $5/16$ " hole through $3/4$ " iron
Length 23". Wt. 14 lbs. Depth of throat $1-11/16$ "
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Can be supplied as our Channel punch for angle and Channel Iron.

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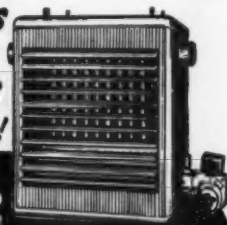


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Representatives in all major cities

appointments

(Continued)

home products division. He will have headquarters in Los Angeles. Ed J. Regan, with headquarters in Dallas, will have charge of 13 southwestern and mountain states. Harrison D. Kurtz will head sales in eight midwestern states and will have offices in St. Louis.

► **GEORGE A. CHAPPELL, JR.** as chief engineer of Cobell Industries, Inc. Mr. Chappell was formerly vice president of engineered products for Automatic Firing Corp.

► **EDWARD W. GARRISON**, Morganfield, Ky. as district sales manager covering western Kentucky and parts of Tennessee and Missouri for the U. S. Machine division, Stewart-Warner Corp. B. Robert Ozer will cover the Pittsburgh territory, Robert B. Redman will have charge of the Iowa territory, and Arley H. Kuhn will serve northern Wisconsin and upper Michigan.

► **HENRY LESIEUR** as district sales manager covering the states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island and part of New York for Typhoon Air Conditioning Co., Inc. Mr. Lesieur's headquarters will be in Harrisville, R. I. Robert J. Allen has been appointed district

sales manager to represent the company in Maryland, Delaware, Virginia, the District of Columbia and parts of Pennsylvania and New Jersey. His headquarters will be in Philadelphia.

► **WILLIAM W. MORRISEY** as sales manager of the blower division of Lau Blower Co. Mr. Morrisey was formerly district manager for the Waterman-Waterbury Co. covering the states of Illinois and Indiana, and before that was with White-Rodgers Electric Co.



William W. Morrisey



William J. Ward

► **WILLIAM J. WARD** as regional manager of the midwestern region comprising western Missouri, Kansas, Oklahoma and the Texas panhandle for the Ingersoll Conditioned Air division, Borg-Warner Corp. Mr. Ward will have headquarters in Kansas City, Mo. Prior



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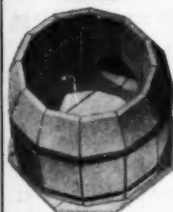
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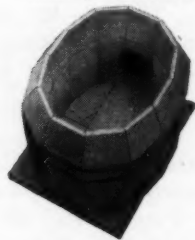
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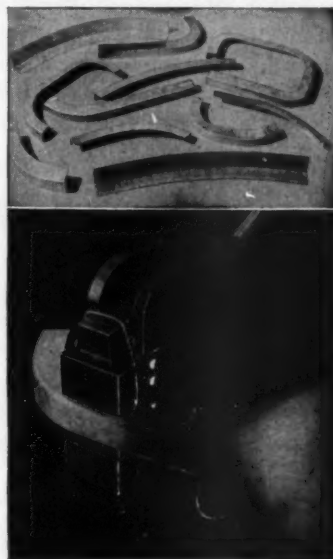
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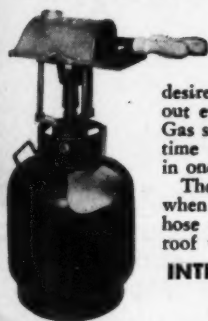


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IMPROVED SQUARE DUCT HANGER

NEW

With New "Positive Lock" cam action feature... No Special Tools! Hammer does the job! Available in six lengths.



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SEE your **SUPPLIER**
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TEST THEM YOURSELF
ON THE JOB!



A. M. HEXDALL CO.

MORRIS, ILLINOIS

Manufacturers of Sheet Metal Specialties

appointments

(Continued)

to his appointment, he was sales representative for the Home Heating and Cooling department of General Electric Co.

► **LEE DANIELSON** as sales representative working out of the Milwaukee district sales office of the Automatic Heating and Cooling division of the Heil Co. He will serve wholesalers in Wisconsin, Minnesota and the province of Manitoba as well as parts of North and South Dakota and Michigan.



Lee Danielson



Claude C. Kirk

► **CLAUDE C. KIRK** as air conditioning field engineer for the Janitrol Heating & Air Conditioning division of Surface Combustion Corp. Mr. Kirk will give

specialized assistance on air conditioning equipment service and application problems to the division's field staff in the U. S. and Canada.

► **GENNER BROS. Co.** with offices at Hackettstown, N. J., Bath, Pa. and Wilkes-Barre, Pa. as distributors of oil and gas furnaces for Jackson & Church Co. Territory served includes northeastern Pennsylvania and part of New Jersey.

► **FREDERIC S. BARTLETT**, Ardmore, Pa. to represent Connor Engineering Corp. in the states of Delaware and Maryland and parts of New Jersey and Pennsylvania. The John W. Joiner Co., Dallas will cover the Dallas and Fort Worth area. Both representatives will handle the sale of "Kno-Draft" residential diffusers.

► **JAMES ECHTERNACHT** and **Byron Mowatt** as district managers for the western sales office of Armstrong Furnace Co. Mr. Echternacht will cover Nebraska and the Dakotas; Mr. Mowatt will cover Texas and Oklahoma.

► **STAN BASFABLE** as sales representative for the Williamson Heater Co. covering the north central area which comprises Minnesota, the Dakotas and parts

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- Easy to operate, install, service and sell.
- Capacity 0.4 to 1.5 gal. per hour
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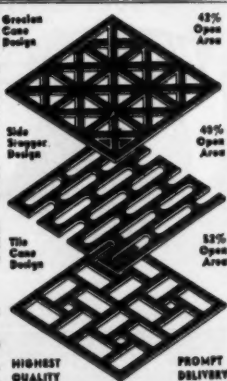
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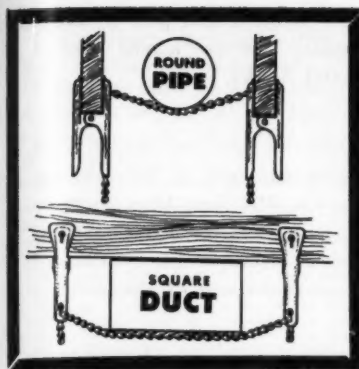


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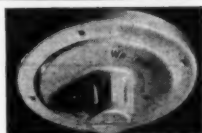
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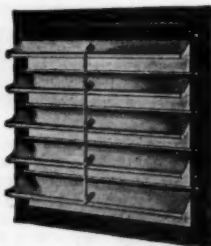
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the life of the shutter. Sizes from 12"
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AUTOMATIC SHUTTER
Front View (Open)

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Saves Time—Saves Labor FOR THE Sheet Metal Duct Fabricator



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PITTSBURGH LOCKSEAM

Caldwell Hammers Seal Pittsburgh Lock Seams with Speed and Smoothness

In addition the Caldwell Hammer is used for chipping,
drilling, gouging, small riveting, cutting, sealing, caulking,
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use with Caldwell Hammer also available.

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BURGESS THOMAS COMPANY

17 James Street
See Your Local Jobber
Bloomfield, New Jersey

appointments

(Continued)

of Wisconsin and Michigan. The New England area — Maine, New Hampshire, Massachusetts, Connecticut, Rhode Island, Vermont and part of New York — will be handled by William Kerrigan. Dave Wightman has been named to represent the company in central New York and northeastern Pennsylvania and Jim Kidd will cover the Pittsburgh area.

► **FLORIDA WEST COAST DISTRIBUTORS, INC.**, 6730 Central Ave., St. Petersburg as a distributor for United States Air Conditioning Corp. in the Florida west coast trading area. Automatic Cooling & Heating Co., St. Petersburg has been appointed a dealer to cover Pinellas county, including St. Petersburg.

► **THE THOMPSON-CRIDER DISTRIBUTING CO.**, 1504 N. W. Johnson St., Portland as distributor in the state of Oregon for Perfection Industries, Inc. Martin G. Larsen has been appointed sales representative to cover the Chicago area.

► **HAROLD WINNINGHAM & Co.**, Seattle as representative for Zatzko Metal Products, Inc., in the states

of Washington, Oregon, Montana and part of Idaho. The Winningham company will also handle sales in northwestern Canada and Alaska.

► **JAMES F. VAN DIEN** as sales representative in North and South Dakota and part of Nebraska for Inland Steel Products Co. Mr. Van Dien formerly served in the planning and control division at the Milwaukee office. James F. McLarnan has been named sales representative to cover the state of Minnesota.

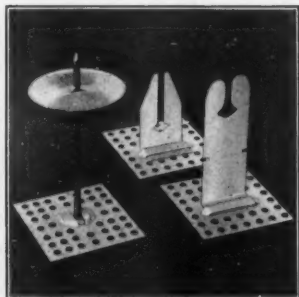
► **GEORGE MILLER** as representative for Maid-O'-Mist, Inc. covering the states of Wyoming, Colorado and New Mexico and the city of El Paso, Texas. He will have headquarters in Denver.

Obituary

Sidney C. Reese

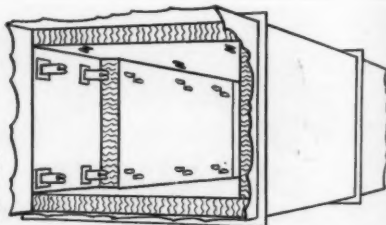
SIDNEY C. REESE, assistant to the sales manager of the furnace sales division, Perfection Industries, Inc., died April 6 in St. Luke's hospital, Cleveland, following a short illness. Mr. Reese, who was 59 years old, joined the company in 1916 as a rate clerk in the traffic department.

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Stic-Klips permanently bind almost any insulating substance to masonry, wood, metal — flat, corrugated, curved, unusual-shaped. Eliminate drilling, puncturing metal. This modern method is used for heating, ventilating, air conditioning, processing equipment, cold storage, acoustical, marine installations.

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STYLE "K" END PIECE WITH OUTLET



Sizes 4" and 5" with
Oval Outlet fits 3"
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Made in all metals:
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Manufactured by

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BLOW PIPE ELBOW
SAVES YOU MONEY**

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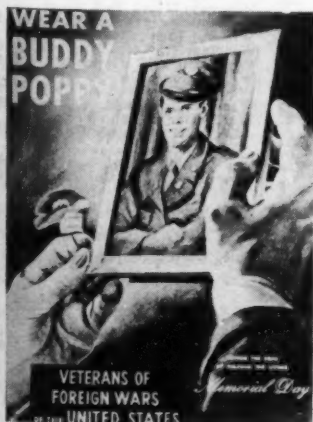
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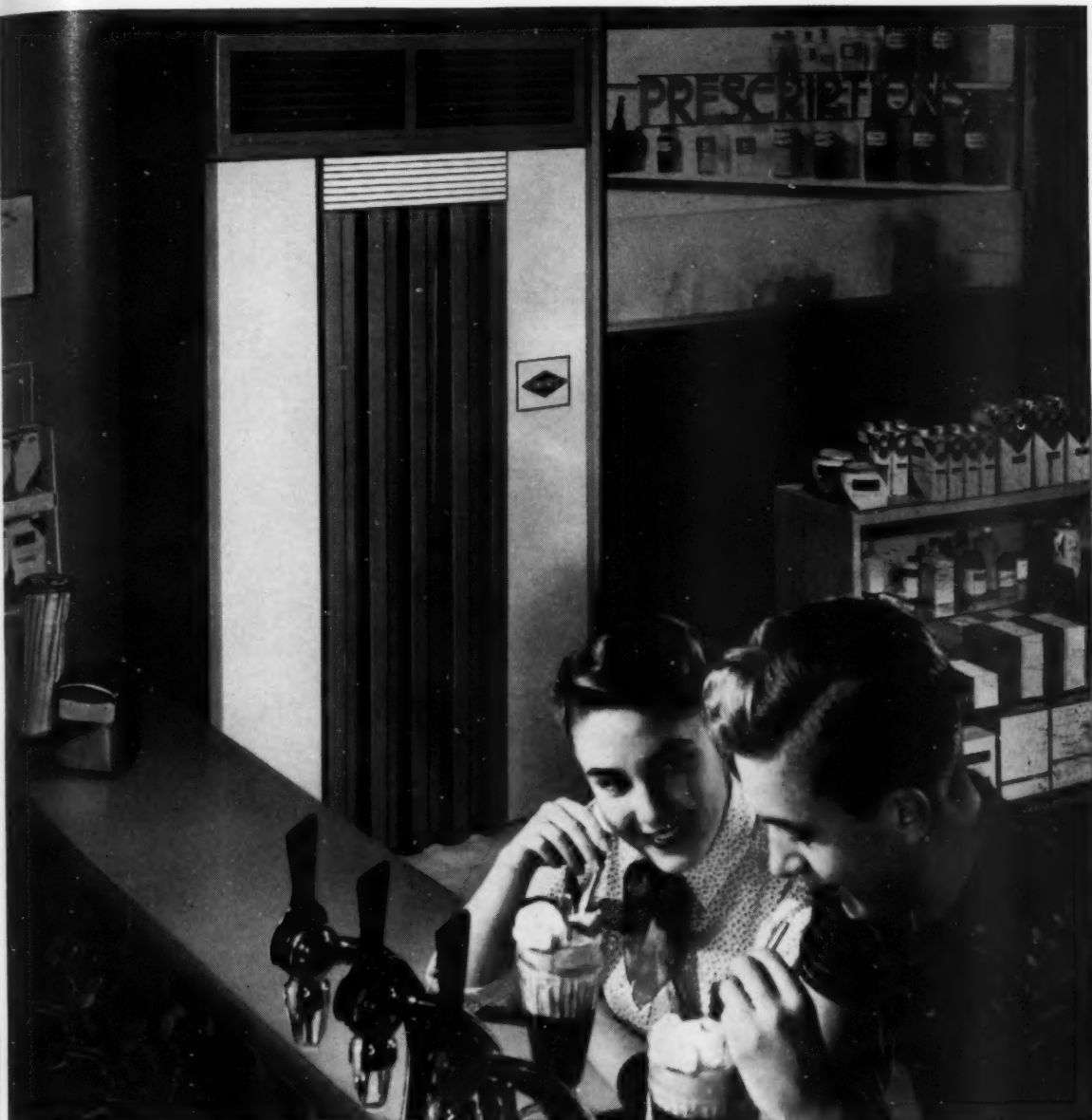
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